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SURGEON TO MANCHESTER ROYAL INFIRMARY AND PROFESSOR OF SYSTEMATIC SURGERY IN THE UNIVERSITY OF MANCHESTER

THERE has been of late a revival of interest in the surgery of the autonomic nervous system, and the operation of sympathectomy is now being employed in the treatment of many diseases. The results obtained are of interest alike to physician, surgeon, and specialist. It seems worth while, therefore, to take stock and to attempt an estimate of the present position and value of the operation. The following remarks are based, in the main, on a series of 41 sympathectomies which I have performed at the Manchester Royal Infirmary and in every case I am greatly indebted to Prof. J. S. B. Stopford for his advice and assistance.

It is necessary at the outset to discuss the terminology of the subject, since upon this there is unfortunately no general agreement. The term sympathetic was introduced by Winslow and implied the whole system, as it was then known. Later, Bichat wrote of the vegetative nervous system and this form is still employed by some writers. Langley's classification, though itself not ideal, is the one in most general use at the present time. Langley designated the whole system as autonomic and subdivided it into the sympathetic and parasympathetic. The former is the great thoraco-lumbar outflow and the latter the cranial and sacral outflows. This distinction is important as the two great outflows, though possibly not so sharply defined as has been hitherto imagined, are, in general, opposed to each other in function.

A study of the various operations on the autonomic nervous system brings out at once the thought that they are, almost without exception, destructive in character. Langley, it is true, attempted anastomosis as part of his researches and, more recently, Sir Charles Ballance has described the experimental anastomosis of the cervical sympathetic cord with the facial and hypoglossal nerves. Beyond these there does not appear to have been any attempt at constructive surgery but the possibilities of this must be borne in mind in future work.

One cannot avoid the thought that sympathectomy is a crude and mutilating operation. By the operation we are merely breaking one link in a chain of which we cannot see the beginnings, and with increasing knowledge the operation should become less frequent or even altogether disappear. Its present position may, not unfairly, be likened to that of thyroidectomy in exophthalmic goitre. If, then, our attempts aim at the destruction of certain portions of the autonomic system it is well, at the outset, to consider what are the main functions of that system which we may hope to influence by ablation of the autonomic supply. These may be arranged in five main groups :—

1. The control of the heart and blood-vessels.
2. The control of respiration.
3. The control of secretory glands.
4. The control of smooth muscle of tubes and viscera.
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Such divisions are obviously incomplete, arbitrary, and tend to overlap, since a clinical result may owe its form to a combination of two or more. They are not intended to do more than to afford a convenient way of splitting up a very extensive and deeply involved subject.

The Control of the Heart and Blood-vessels

The operation of sympathectomy aims at abolishing vasoconstrictor action and it is in this group that the operation is most often performed to-day. The cases fall into two classes. On the one hand sympathectomy may be done to abolish certain noxious influences which are causing vasospasm. Here the operation has proved its value in those diseases of the blood-vessels which are characterised by continuous or intermittent spasm. On the other hand the operation may be done to produce a permanent increase in the calibre of normal and healthy vessels, so that a more abundant supply of blood may be brought to the part.

In the first class the more important lesions are Raynaud's disease, thrombo-angiitis obliterans, the vascular complications of cervical rib, and possibly retinitis pigmentosa. Of these diseases, the most clearly cut and instructive picture is afforded by the cases of cervical rib. These patients suffer from a persistent, low-grade irritation of a bundle of sympathetic fibres by friction against the rib. The result is spasm of the arteries of the limb which is evidenced by pallor and coldness of the hand. After an interval, often some twelve months, thrombosis occurs and ascends fairly rapidly up the limb to a point about the junction of the axillary and brachial arteries. Finally, gangrene of one or more fingers is seen. The picture is one of spasm followed by thrombosis and suggests that long-continued spasm of an artery will by embarrassment of the vasa vasorum lead to ill-health of the vessel wall and so to thrombosis. The histological appearances of thrombosed arteries in these cases of cervical rib correspond with those in the vessels of a fowl in which persistent spasm has been caused by repeated doses of ergot.

Many writers on the vasospastic diseases appear to regard spasm and thrombosis as quite separate conditions, and in other writings the thrombosis is envisaged as preceding the spasm. From what has been said above on the cervical rib cases it would appear that spasm and thrombosis are merely stages in the disease and that thrombosis is the result of spasm, provided always that the spasm is sufficiently severe and long-continued. The point is important because we may regard these vasospastic diseases as beginning with an area of spasm which as time goes on is encroached upon by an ever-increasing area of thrombosis. Sympathectomy can cure these cases only by abolishing spasm, but can have no conceivable effect on a vessel which is already choked by an organised thrombus ; hence if the operation is to succeed it must be done reasonably early in the course of the disease. This contention is fully borne out by the results we have obtained from sympathectomy in these diseases. Those cases in which spasm is evident give satisfactory and even brilliant results, but those cases in which thrombosis is marked, and especially those in which gangrene is threatened or actually present, give results which can only be regarded as disappointing. For example, the results in the more advanced cases of thrombo-angiitis obliterans are poor.

There is, fortunately, an easy method of discovering the relative amounts of spasm and thrombosis in any given case and this question will be discussed later.

* Abstract of a presidential address to the Manchester Medical Society on Oct. 5th.

Whilst sympathectomy is amply justifying itself in the vasospastic diseases, its history has not been so fortunate when we come to the heart itself. On the assumption that angina pectoris depends upon spasm and occlusion of the coronary arteries its treatment by sympathectomy would be rational, in that it is based on the same reasons as weigh with us in claudication of the limbs. The operation has, however, given such variable and often disappointing results that it has not found favour with British physicians. The difficulties are great and arise mainly from the complex pathways of supply and from the uncertainty as to how far the coronary vessels are narrowed by spasm or choked by atheroma. For this latter condition, always the more probable, sympathectomy can do nothing.

The second class of case in which sympathectomy affords good hope of relief or cure comprises many and varied diseases. The factor common to all is that good may be done by producing a vasodilatation and so bringing more blood to the part. This class includes conditions such as chronic ulcers, neuroparalytic keratitis, and the blue chilblained limbs of anterior poliomyelitis.

There is one type of case in which we have found sympathectomy to yield very good results. The patient, usually a young woman, suffers from poor circulation, particularly in the lower extremities. Such a condition is, of course, common and is usually of no great moment, but in a few instances the condition is so extreme as to cause persistent weakness and aching of the limbs with chilblains and indolent ulcers, so that the patient is badly crippled. We have found that lumbar sympathectomy will give excellent results in these cases; the patients are restored to a full active life.

Another direction in which the operation may have a promising future is in the treatment of certain cases of chronic infective (rheumatoid) arthritis. Reported cases tend to show that in those patients who benefit distinctly by the temporary local vasodilatation caused by the application of heat or counter-irritants, the operation of sympathectomy may be of much use.

There is also that group of distressing cases known as scleroderma and sclerodactyly. In our experience sympathectomy is of real value in these conditions. It is astonishing to see how quickly the skin begins to return to a loose, supple, and natural state. But it is essential that the operation be done early before very gross changes have set in. We have found the result disappointing where advanced changes are present in the skin with contractured fingers deformed by persistent ulceration of the pulp.

The Control of Respiration

Sympathectomy has been very extensively done in the past for asthma and in view of the spasm seen in many cases the procedure would appear to be reasonable and hopeful. Unfortunately the results have not proved good and a survey of the literature leads one to the conclusion that the operation must, in the present state of our knowledge, be regarded as not worth while.

The Control of Secretory Glands

One of the great functions of the autonomic nervous system is to control the glands, both of internal and external secretion. The power to regulate the secretion of a gland should be of great help in the treatment of some diseases, but unfortunately it has not been possible to use this weapon, save in a very few cases.

Sympathectomy for hyperthyroidism has been done very extensively but has deservedly dropped out of use; obviously it is based on false pathology. E. Hesse reports success from sympathectomy in cases of profuse salivation due to over-activity of the parotid gland.

At present the main scope of sympathectomy in this group appears to be in the treatment of excessive sweating. Some cases of cervical rib show this symptom and it is interesting to note that it disappears at once when the frictional irritation of sympathetic fibres is brought to an end by removal of the rib. In some cases of the Raynaud type sweating may cause serious inconvenience, especially in the lower extremity.

I have had a male patient with attacks of coldness and pallor in both feet in whom the amount of sweat gave rise to serious disability; the skin of the soles became sodden, up-heaped, and infected, so that the man was confined to bed. Lumbar sympathectomy at once stopped the sweating and within three weeks the skin was normal; the man is now doing his full work.

Control of Smooth Muscle of Tubes and Viscera

Broadly speaking the parasympathetic is the motor and the sympathetic the inhibitory nerve for the smooth muscle of the body.

The action of the vagi on the stomach has long been known and some surgeons have attempted the treatment of gastric ulceration by section of these nerves. Good results have been claimed and, in this respect, J. Beattie's observation that stimulation of a higher centre in the floor of the third ventricle produces increased motility of the stomach and increases acidity of its juice is of great interest. Some of Beattie's animals died from peritonitis due to the perforation of acute ulcers and this observation will have to be taken into account in the vexed question of the ætiology of gastric and duodenal ulceration.

It has long seemed probable that conditions such as "congenital" pyloric stenosis and "congenital" megacolon owe their origin to sympathetic and parasympathetic imbalance. The treatment of Hirschsprung's disease by sympathectomy is giving good results, provided it is done at an early age before gross and irrecoverable changes have taken place in the wall of the gut.

It is an easy step from the treatment of megacolon to that of obstinate constipation. R. H. Boggon, working under Sir Percy Sargent, has recently reported five cases in which good results have followed sympathectomy and has given a list of indications for the operation. It is, of course, a common observation that after a lumbar sympathectomy has been done for some other condition the bowel action will show some improvement.

J. R. Learmonth has recently drawn attention to the use of sympathectomy in certain lesions of the urinary bladder. The sympathetic supply to the bladder which passes along the presacral nerve is inhibitory or "filling" in its action, whilst the parasympathetic supply, derived from the sacral routes, is motor or "emptying" in function. In some lesions, low down in the cord, imbalance results and causes retention. This condition has received the name of "the cord bladder" and such cases have been successfully treated by resection of the presacral nerve.

The Relation to Visceral Pain

Relief of pain is often one of the most striking and gratifying results of sympathectomy. Patients who are worn out with the pain of vasospastic diseases usually experience complete relief and will often fall into an unbroken sleep for many hours after the

operation. This sudden and complete cessation of pain tempts one, at first, to think that an afferent pathway has been abolished, but the true explanation is no doubt that given by Lewis. The pain of vascular disease is due to the retention in the tissues of the products of muscular action and when these are swept away by the improved circulation the pain ceases. This contention is in accord with our observation that in severe cases of thrombo-angiitis obliterans with much thrombosis the pain and claudication may not be lost because the sympathectomy has not given a sufficiently marked improvement in the circulation.

Some Italian surgeons have reported the value of sympathectomy of the renal pedicle in cases of pain in the kidney due to no ascertainable cause, and in this country J. B. Oldham has reported a number of favourable results.

Resection of the presacral nerve has been practised very extensively by French and Italian surgeons for the relief of pain due to various pelvic lesions. These include dysmenorrhœa and inoperable growths not involving the sacral plexus. The resection of the presacral nerve has been done on many occasions in this country, but the operation has, to say the least, not been received with the enthusiasm which marks continental writings. Although the results have occasionally been very good and even dramatic, the operation must be regarded at present as experimental. Much work will need to be done before its value can be established; neither its rationale nor its precise indications are as yet clear.

Lastly, it is much to be regretted that the claims which were made for sympathectomy in the spastic paralyses have not been established. In this connexion we have made many observations on the muscular condition of the limbs in sympathectomised patients. We have never encountered any suggestion of altered function, nor have we been able to note by ordinary clinical tests any difference from the normal in these patients.

Preliminary Tests of the Value of the Operation

In the majority of the diseases in which sympathectomy is being considered as a line of treatment, it is possible to obtain an exact forecast of the extent to which the operation will succeed. In cases in which the objective is to produce vasodilatation, the degree to which this change is possible can be ascertained beforehand either by the induction of fever or by nerve block. The former method depends upon the induction of fever by the injection of foreign proteins; the latter consists in a temporary interruption of sympathetic fibres by either spinal anæsthesia or local nerve block. These methods have been described by several writers and they should, in one or other form, be always done before deciding on sympathectomy. The observations on surface temperature will yield an accurate measure of the extent to which the disease is due to spasm and the extent to which collateral vessels may be enlarged by sympathectomy.

Similarly, in cases of Hirschsprung's disease, a barium enema given under spinal anæsthesia will give valuable information as to the possibility of shrinkage in the affected bowel after sympathectomy.

The Type of Operation

The present account is not concerned with the technique of the operation, but the type of procedure calls for some mention. In diseases of the extremities the perivascular sympathectomy should not be done because, valuable as it has been in pointing the way, it is in these cases incomplete and anatomically unsound. It is, however, retained in some abdominal sympathectomies—e.g., of the renal and inferior mesenteric arteries—though here it is open to the objection that it destroys sympathetic and parasympathetic alike. Ramisectomy, as inflicting the minimum of damage, would be the ideal operation but for the fact that the anatomy of the autonomic system is very variable and our knowledge of it far from complete. It is best, therefore, to do too much rather than too little and, at present, the extensive removal of cord and ganglia gives the best chance of success.

The Permanency of the Results

It is very commonly objected that the results of sympathectomy are merely temporary and that relapse is common. That this is true of some cases there can be no doubt, but the explanation will be found to lie in the inadequate removal of tissue. For example, perivascular sympathectomy is quite inadequate in the limbs. But the main reason for relapses and incomplete results lies in the very complicated and variable anatomy of the ganglia and rami.

In this respect there is a difference between the upper and lower extremities. From our experience we believe that a radical removal of the lumbar sympathetic cords, together with the second, third, and fourth ganglia on each side, gives a complete and permanent result in the lower extremities. In the upper limb the results are not so consistently good and complete. This is due to the very great variation in the arrangement of the lowest cervical and first two dorsal ganglia with their associated rami. Drawings made from dissections of 25 subjects by Dr. Donal Sheehan in the Department of Anatomy at Manchester show a variability so extreme that scarcely two subjects are alike. The cause of failure and relapse in the upper limb is, beyond doubt, inadequate operative removal.

It is much to be desired that all material removed by operation be very carefully examined. Reports on this aspect of the subject are few and scanty. Fibrosis of the cord and ganglia, with degenerative changes in the cells, have been described. In a large series we have found these same changes, but when these specimens are contrasted with a series of presumably normal cords and ganglia the differences are not great. It is evident that the normal appearances show great variation, particularly in the amount of fibrous tissue, and further work on the minute structure of the human autonomic system, especially in relation to the effect of age, is much needed. Even if these changes in the cords removed at operation be established, we are still in the dark as to what is causing them, and in this respect the recent work on the discovery of a higher controlling centre for the autonomic system is of great and hopeful significance.

Hesse gives a very full account of the many conditions and diseases for which sympathectomy has been practised up to the year 1930. To read the number and variety of these adventures is to realise why sympathectomy is suspect and has a past to be lived down. It is most earnestly to be hoped that the present revival of the operation will be based on sound anatomical and physiological foundations. If this be granted, sympathectomy will certainly take its place as a distinct advance in the treatment of some chronic and hitherto intractable diseases. It will find its place the sooner if it is done early in the history of the case. It should not, as is too often the case at present, be regarded as the last and desperate resource.

THE TREATMENT OF BURNS IN OUT-PATIENTS WITH REINFORCED TANNIC ACID DRESSINGS

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In the out-patient department of a hospital, and also in general practice, burns and scalds frequently prove difficult and disappointing to treat. Regarded at first so often as comparatively trivial injuries, they are found to require painful daily dressings, which cause considerable distress and anxiety to the patient. This *pain* and the almost inevitable *sepsis*—with extra damage to tissues, delayed healing, and ugly scarring—are the factors which make small burns so formidable, especially in young children; much relief should be felt by patients, doctors, and nurses alike if a method of treatment could be found in which these two factors are reduced to a minimum.

The excellent articles of E. C. Davidson, W. C. Wilson, and others, to which references are given at the end of this paper, clearly set forth the principles involved and the methods employed in the tannic acid treatment of burns which are serious enough for the patient to be admitted into hospital. Little, however, has been written on the application of this method to the treatment of out-patients, and the results recorded are not always encouraging.

For the treatment of burns in general, tannic acid possesses several outstanding advantages over other substances. As a powder it is easily stored or carried about. It dissolves readily in water. It is excellent as a first-aid dressing, since it diminishes pain and is antiseptic. When the patient can be confined to bed, Davidson's treatment consists in thorough cleansing of the burned area; cutting away all the blistered skin; the application of gauze dressings soaked in a solution of tannic acid in water; the removal of these dressings after 24 hours and exposure of the tanned surface to air and radiant heat. A modification of Davidson's method was introduced by Beck and Powers, who used a spray for applying the solution, the spraying being repeated at intervals during the first 24 hours. The crust forms a protective covering for the burned area, and in it are fixed those products of tissue-breakdown to the absorption of which the toxæmia following burns is due. Pain is relieved, sepsis eliminated, and healing takes place quickly; in ten days to a fortnight the crust peels off, exposing new skin beneath. It has been found that if the crust is covered with a bandage and not exposed to the air it soon becomes moist and soft, the toxins are dissolved out of its deep surface and absorbed, and sepsis usually follows.

With a small burn a single preliminary dressing is needed and the patient has to be sent home. Here lies the difficulty; to form a thick crust at a single dressing and to prevent this crust becoming soft under a bandage. Reinforcement of the crust suggested itself as a possible way out of the difficulty.

METHODS TRIED

Over a period of six months in the out-patient department of St. Bartholomew's Hospital, 63 cases of minor burns have been treated with reinforced tannic acid dressings, the progress of each case being closely followed.

Three modifications of the method have been tried, as it was hard to foretell the treatment most suitable for different types of patients, of different ages and occupations, with burns and scalds produced in different ways, of different degrees of severity and extent, in different parts of the body, and seen at different periods after the accident. The oldest patient in our series was a woman of 73, and the youngest a child of 18 months; the burns have been situated on the face, shoulders, chest, back, arms, legs, hands, and feet, and have varied in size from $2 \times 1\frac{1}{2}$ in. to 12×6 in. The majority have been scalds from boiling water, milk, or tea; but high-voltage electric current, molten wax, hydrofluoric acid, salad dressing, and boiling beer have entered the list. The interval between the time of the accident and the commencement of treatment varied from half an hour to ten days.

The three methods we tried were: (*a*) tannic acid in ether reinforced with gauze; (*b*) tannic acid in ether reinforced with gauze and collodion; (*c*) tannic acid in water reinforced (on the third day) with collodion.

(*a*) *Tannic acid in ether reinforced with gauze.*—Under general or local anæsthesia, the area around the burn and the burned surface itself were cleaned with spirit, blistered skin cut away, and a saturated solution of tannic acid in ether (2½ per cent.) painted on with a soft camel-hair brush until a white coagulum formed. A thin layer of gauze was then laid over this so as to overlap its edges, covered with more gauze soaked in the tannic acid solution, and a bandage applied. Two days later the gauze was lifted off, leaving one layer still in contact with the raw area; the edge of this lowest layer was usually black and hard, its centre still yellow and moist. Strips of gauze, soaked in the same solution, were again laid on, the patient being warned that this would be painful for a moment or two. On the fourth and fifth days, if the centre of the gauze was still moist, more of the solution was again used; if dry, only a spirit dressing was needed, and the patient did not attend for a week. On the 12th to the 16th day the layer of gauze peeled off without pain, exposing new pink skin underneath. This was hardened with spirit for two days before all dressings were discarded.

We find this method excellent when the burns are extensive and dirty, when oil or grease has been used as a first-aid dressing, or when there has been a delay of more than 24 hours after the accident, for these conditions necessitate thorough cleansing with ether and ether soap, which must be done under an anæsthetic.

(*b*) *Tannic acid in ether, reinforced with gauze and collodion.*—Under local or general anæsthesia the burned area and its surroundings were cleaned as before, and painted with tannic acid in ether until a coagulum began to form. To the tannic acid in ether an equal quantity of collodion was then added and the painting continued. Over the coagulum a thin layer of gauze was laid, fixed in position with more of the solution, and, when this was dry, covered with a dressing. Next day all dressings were removed except the lowest layer of gauze, which was now adherent; and more of the mixture painted on—painful for a moment. On the third day this was repeated, usually without pain. After about 14 days the reinforced crust peeled off, leaving a dry, healed surface.

This second method is satisfactory in clean cases where other circumstances call for an anæsthetic—e.g., in nervous patients and young children. The extra strong crust resulting from the combined effect of gauze and collodion is especially suitable in children, who are always restless and in whom adequate splintage is difficult.

(*c*) *Tannic acid in water reinforced, on the third day, with collodion.*—Without an anæsthetic, the skin around the burn was cleaned with spirit, avoiding the raw area, blisters cut away, and the burn itself carefully painted with a fresh 5 per cent. solution of tannic acid in water

(grs. 20 of the powder—a level teaspoonful—to an ounce of warm water). This usually caused no additional pain, in fact, when coagulation commenced, what pain there was disappeared; if, by chance, the patient did complain, a weaker solution was used at the beginning. When a white coagulum formed, gauze soaked in the solution was laid over the burn and a bandage applied. Next day the gauze was moistened with the solution and carefully removed, but where the lowest layer was firmly adherent it was left in position. More of the solution was then painted on and allowed to dry before the dressing was replaced. On the third or fourth day the crust was reinforced by painting on collodion mixed with an equal part of tannic acid in ether; if the crust was not dry this was sometimes painful. On the fifth day this was repeated, and in about a fortnight the crust peeled off. If a piece of the crust was separated, as happened not infrequently even when great care was taken, we covered the small raw area with a single layer of gauze and painted it over with the collodion mixture.

We believe this third method will be found to have the widest application. No anæsthetic is needed, little pain is felt, and it has all the advantages of the tannic acid treatment of severe burns in the wards. By suspending the use of the water solution on the third day, and by strengthening the crust with collodion, the chance of the affected area becoming moist when covered with a dressing is considerably diminished. To what this effect is due is an interesting problem. When the crust is covered with collodion evaporation is diminished, and one would expect more softening than before. In our cases the opposite has occurred, which leaves one to doubt whether evaporation from the surface is as important a factor as was at one time thought. A mild degree of sepsis arising from the edge of the crust where it is rubbed by a dressing and in contact with skin which cannot be quite sterile may perhaps be the sole cause of this softening. When a layer of collodion is added to the crust itself and the skin around it, more protection is afforded at the edge, the dressing slides more easily over its surface, mechanical damage to the crust is less likely to occur, and organisms are thus unable to gain a hold.

For the treatment of small burns at home the collodion can be omitted, and it is only necessary to cut away the blisters with a clean pair of scissors, to apply a dressing soaked with tannic acid in water, and to change this daily for the first few days. The moist dressing may be changed for a dry one on the second day if all the raw area is covered by a crust; if a piece of the crust is torn off by accident a moist tannic acid dressing may have to be replaced for 24 hours.

ADDITIONAL CONSIDERATIONS

1. In the *first-aid treatment* of burns and scalds it seems probable that much benefit might result if aqueous tannic acid (5 per cent.) were used in every case. The only materials needed would be a small packet of powder (grs. 20) from which a fresh solution is prepared with the greatest ease at a moment's notice, and a strip of clean gauze. Pain would be relieved, the formation of a coagulum ensured without delay, and the chances of sepsis reduced.

The use of oily substances as first-aid treatment is to be deprecated, because they have to be cleaned away under an anæsthetic before tannic acid is applied. It is said that they interfere with subsequent tannic acid treatment, but in our series carron oil, butter, liquid paraffin, and machine oil were used by different patients before they came to hospital, and in every case, after thorough cleansing (under anæsthesia) with ether, in which these oily substances are soluble, the tannic acid formed a satisfactory coagulum.

2. *Delay between the accident and commencement of treatment* is said to influence adversely the action of tannic acid, but in our series this factor has not been prominent; after delays of from three to nine days the burns are always infected, but with thorough cleansing under general anæsthesia, and the use of tannic acid, many painful dressings have been eliminated and healing has been rapid.

3. The *degree of the burn* or scald is a factor of importance. First degree burns—showing only redness of the skin, using Dupuytren's classification—may need no special dressing. Burns of the second degree, when a blister is formed without involving the dermis, or of the third degree, with partial destruction of the dermis (leaving the hair follicles intact)—the commonest types of burns and scalds—any one of the methods here described may be used, the last being most often suitable. Those of the fourth degree, with the whole dermis destroyed, may be treated in the same way if small enough to be dealt with in the out-patient department; but in this case treatment is prolonged because a granulating surface is left when the crust comes off at the end of two or three weeks, and this has to be covered in course of time by epithelium growing from its edge.

4. *Local anæsthesia* was employed in nine cases, all small burns 4 × 3 in. in diameter. 4 per cent. novocain was either injected into the blister, painted on the raw surface, or infiltrated around the burn. It was useful in old persons, and when general anæsthesia was refused when small burns were very dirty and needed thorough cleansing.

5. A *scrubbing brush* is often recommended for cleaning up the burned area. We used one in our earlier cases but have since given it up, as we found to our surprise that those cases healed the quickest which were treated under local anæsthesia, when no scrubbing brush had been used in consideration for the feelings of the patient. Much bleeding, such as follows vigorous scrubbing, tends to raise the coagulum above the surface of the burn with the collection of fluid between the two.

6. It is important that a *fresh solution* of tannic acid in water should be made up every time it is required, as reduction to gallic acid occurs after a few days.

7. *Solutions stronger than 5 per cent.* are said to irritate the skin and even to cause sloughing in delicate tissues. We find that a 5 per cent. solution has no injurious effect on the burn itself or on the skin round it.

8. We now use a *soft camel-hair brush* ¾-inch wide instead of a spray. If bleeding or serous exudation be free and a spray is used, it is the surface of the blood or serum which is coagulated and fluid collects beneath. With a brush such exudates are wiped away, allowing the tannic acid direct access to the surface of the burn. One brush lasts a long while—e.g., we have used only two for all our cases and both remain in good condition. After use they are cleaned in ether soap and boiled, stored dry, and before use boiled again. With burns and scalds of the face, the eyes and nostrils have to be carefully protected from tannic acid, and a brush is found to be more convenient than a spray.

9. *Adequate splinting* is almost invariably needed for burns involving hands, elbows, and ankles. A plaster-of-Paris bandage, folded on itself to form a "slab" and fixed with a bandage, is easily applied to limbs of any size or shape.

10. A great deal of the success of treatment depends on the care with which the *second dressing* is done. With the larger burns half an hour or more

may be required to remove the gauze, layer by layer, and even thread by thread, when it sticks to the crust. If handling be rough this crust may be pulled right off in places, and every precaution should be taken to avoid this. Rather than run this risk it is often better to leave the lowest layer of gauze in position and to treat it thereafter as part of the crust.

SUMMARY

In this series of 63 consecutive cases a modification of the recognised tannic acid method has been used for the out-patient treatment of burns and scalds.

If the crust formed by the recognised method is covered with a dressing and bandage it tends to soften, become septic, and detached. The difficulty has been overcome in this series of cases by reinforcement of the crust, either with a thin layer of gauze, gauze and collodion, or collodion alone. The results have been very encouraging, especially in those burns of the face and hands which often give so much trouble. Details of the three methods are given.

In the majority of second and third degree burns the method of choice, and one that reduces pain and sepsis to a minimum, is to paint the burned area with a 5 per cent. solution of tannic acid in water, and apply a dressing soaked in the same solution. No anæsthetic is required. Next day when the dressing is removed the burn will be found covered with a thin brown crust, and the dressing is repeated. On the third and fourth day this crust is reinforced with collodion. The surface then remains hard and dry and the crust separates towards the end of the second week, exposing the new epithelium which has grown beneath it.

For the first-aid treatment of all burns and scalds a plea is made for the use of dressings soaked in a 5 per cent. solution of tannic acid in water (grs. 20 of the powder to an ounce of warm water).

Vigorous cleaning and scrubbing are avoided, as we find these do more harm than good.

The tannic acid solution is applied with a soft camel-hair brush (¾ in. wide) instead of a spray.

Softening of an ordinary tannic acid crust, when covered up, is usually thought to be due to diminished evaporation from its surface. This series of cases rather suggests that evaporation plays but little part, and that the softening is nearly always due to sepsis following mechanical damage, from the rubbing of a dressing. The effect of reinforcement is entirely mechanical. The strengthening is most essential at the edge of the crust where it is in contact with skin and its organisms; here it is that separation first occurs from the friction of dressings and organisms first gain a hold. The agents used for reinforcing the crust all help to prevent this separation at the edge, and it is to this, we believe, the beneficial effect of reinforcement is due.

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THE ÆTIOLOGY OF BREAST CANCER

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CHEMIST TO THE COMMITTEE

AMONG the most lowly carcinogenic agents for the epithelium of mice that we have utilised are oleic acid and some of the almost completely saturated mineral oils. It is the action of these substances, and especially the former, that we wish to discuss here. Their carcinogenic potency is such that they affect relatively little the surface and follicular epithelium, rarely inducing more than a hyperplasia; and they never excite the surface epithelium to do more than form a benign tumour, so far as our experience goes. Their action is, however, not always so benign on the sebaceous cells, and we have specimens of malignant sebaceous adenomas of mice induced as a result of their continuous applications.

A commonly observed morphological change in the skin of animals painted with carcinogenic agents is related to the sebaceous cells, and it did not escape the notice of the pioneers working with tars that sebaceous cell atrophy almost always followed their use. The most potent carcinogenic agents do not necessarily induce the greatest degree or the most rapid sebaceous cell atrophy. Most agents being a mixture of variable chemical constituents embodying both carcinogenic and non-carcinogenic compounds, some of the latter may act detrimentally on the sebaceous cells as well as the former. Among the various agents which we have utilised we have found that they have a decreasing toxic influence in the following order, the toxic gradually being replaced by a stimulating influence.

SOME CARCINOGENIC AGENTS

1. Ordinary *coal-gas tars* are the most toxic substances we have tested for the sebaceous cells, and continual application of them invariably leads to complete atrophy of the sebaceous glands in a relatively short space of time.

A few applications given over a short interval or an occasional application from time to time may, however, induce a sebaceous cell hyperplasia. Similarly an extremely dilute gas tar may either have no influence on them or may induce a hyperplasia, and even a tumour. Thus the substances which are influencing the sebaceous cells have apparently a mode of action similar to those influencing the cells of the surface epithelium. When concentrated there is destruction, somewhat weaker there is formation of malignant tumours, still weaker we have benign tumours only, and if we continue to dilute our agent hyperplasia only results, and eventually, when using an extremely dilute agent, one can detect no change at all in the sebaceous cells, which appear normal in all respects.

2. The very much more highly carcinogenic *synthetic tars* are far less toxic to the sebaceous cells than are coal-gas tars.

Often their detrimental effect upon the sebaceous cells is by no means obvious. It is probable that in coal-gas tars there are substances which are poisonous for the delicate sebaceous cells but without palpable influence on the more sturdy cells of the surface epithelium, and that the true carcinogenic compounds in both types of tar act similarly on sebaceous and surface epithelial cells of the skin. While the mechanism of the action may be similar it is evident that the degree of action is not the same; a concentration of carcinogenic compounds which may excite malignant new growths of the surface epithelium will probably cause

a certain amount of sebaceous cell atrophy, while a concentration sufficient to lead to a malignant sebaceous cell tumour we should expect to leave the surface and follicular epithelial cells more or less unaffected.

3. *Shale oils* are apparently the most carcinogenic of all mineral oils, and in the carrying out of an ordinary experiment with this category of agent one usually observes a considerable amount of sebaceous cell atrophy.

To a less degree atrophy is also observed when utilising potent mineral oils obtained from petroleum oil wells, but with weakly potent mineral oils the sebaceous cells may be little affected.

4. When we come to the almost completely *saturated mineral oils*, sebaceous cell hyperplasia begins to be observed, and eventually with certain specimens of oil we may come across sebaceous adenomas.

Thus the mineral oils which are most likely to induce sebaceous adenomas are those which are highly purified with sulphuric acid, &c., such as are met with commercially, as medicinal liquid paraffins, hair brilliantines, and transformer oils. As might be expected, of two samples of mineral oil of an approximately equal degree of saturation the heavier the grade the more likely are sebaceous tumours to be induced, engine and cylinder grades being as a rule less active carcinogenically than their spindle grade counterpart.

5. The most effective sebaceous cell stimulant we have met with is *oleic acid*.

This acid causes simultaneously a sebaceous cell hyperplasia and a hyperplasia of the surface and follicular epithelium. Long-continued application may eventually lead to sebaceous adenomas and benign papillomas of the epidermis, the latter being by far the commoner. We have not meanwhile succeeded in inducing any malignant tumours with the acid used alone, presumably owing to our animals not having been subjected to applications of the agent for long enough time. We were naturally not slow to appreciate the importance of these observations with oleic acid, and their possible significance in relation to breast and other forms of cancer.

COMBINATION OF AGENTS

In several of our previous publications we have discussed the carcinogenicity of chrysene, an unsaturated aromatic hydrocarbon isolated from our synthetic tars. This substance has a relatively low degree of carcinogenicity compared with dibenzanthracene, a related hydrocarbon recently synthetically prepared by E. L. Kennaway and J. W. Cook. Chrysene is an extremely insoluble substance. Applied as a paste in medicinal liquid paraffin it may induce a few benign tumours of the surface epithelium, and occasionally one of them may become malignant, and it is noticeable that such a paste tends to have a greater stimulating effect on the sebaceous cells than has liquid paraffin when used alone. On the other hand, a paste of chrysene and oleic acid may induce many benign tumours of the surface epithelium, and it is usual for more than half of these to become malignant, provided the animal survive for a reasonable period of time. The benign tumours are somewhat late in arriving, but the malignant lag is on the whole unusually short. The effect of such a paste on the sebaceous cells is irregular, but, broadly speaking, it may be expected that in the region of the skin of animals bearing tumours of the surface epithelium there will not be much evidence of sebaceous cell hyperplasia, or there may even be some atrophy, while in the remaining animals sebaceous cell hyperplasia is the rule, and sebaceous adenomas are not exceptional. While oleic acid seems materially to increase the carcinogenic potency of chrysene and other weak agents it does not act in the same direction when mixed with strong agents such as a synthetic tar, our findings in some of our experiments being shown below. (P.=carcinogenic potency and R.P.=relative carcinogenic potency.*)

Agent.	P.	R.P.
Chrysene 7·5 % in liquid paraffin	4	100
„ 7·5 % „ oleic acid	23	575
Gas tar	133	100
„ „ and 10 % oleic acid	96	72
Synthetic tar B/3 10 % in oleic acid	206	122
„ „ „ 10 % „ liquid P.	169	100
„ „ B/10 10 % „ „ „	721	100
„ „ „ 10 % „ oleic acid	580	80
Shale oil 8, 10 % in liquid paraffin	0	—
„ „ 10 % „ oleic acid	0·4	Inf.
„ „ 20 % „ liquid paraffin	0	—
„ „ 80 % „ oleic acid	16	19
„ „ pure	85	100
Californian oil 9, pure	2	100
„ „ 80 % in oleic acid	5	250

Inf.= infinite.

There may, however, be a vast difference in the action of a second substance when it is mixed with the first agent before applying and when it is applied separately. This is illustrated in the following experimental results.

Experimental conditions.	P.	R.P.
Tar B/1 on skin previously sensitised with { oleic acid	1105	118
Tar B/1 on skin previously sensitised with { lactic „	650	69
Tar B/1 control	940	100
Tar B/19 on skin previously sensitised with oleic acid	1619	121
Tar B/19 control	1339	100
Shale oil, skin treated at intervals with lanolin	0	0
Shale oil control	85	100
„ „ treated in afternoon with lanolin	19	7
„ „ mixed with 10 % lanolin	21	7
„ „ control	293	100
Gas tar 1 % mixed with 0·1 % lanolin (9 to 1)	143	128
Gas tar 1 % treated with lanolin in afternoon	Below 10	9
Gas tar 1 % control	112	100

It is to be noted that previous applications of oleic acid sensitise, while previous applications of lactic acid desensitise. The carcinogenic activity of shale oil is lessened by the admixture of or separate application of lanolin. In the case of gas tar, admixture of the lanolin sometimes increases its activity while separate application lessens it. Also, if oleic acid is applied to one area of skin and tar subsequently applied to another, the activity of the tar is decreased. The reasons for these differences are quite explicable but they cannot be entered into here.

THE TUMOURS AND THEIR BIOLOGICAL SIGNIFICANCE

The accompanying microphotographs will serve to illustrate the type of tumours we have encountered.

Figs. 1 and 2 show a typical malignant sebaceous-celled tumour induced by the application of shale oil treated with an equal volume of pure sulphuric acid. The oil was registered as non-carcinogenic, and the particular tumour under discussion was the sole representative among the 100 animals utilised. The tumour formed a huge mass in the neighbourhood of the left shoulder and axilla, with an absence of obvious metastases.

Figs. 3 and 4 illustrate a massive malignant tumour situated beneath a squamous-celled epithelioma in an animal painted with a chrysene-oleic acid paste. The tumour is essentially basal-celled in nature with what we call sebaceous cell inclusions; an intermixed intermediate type of tumour occasionally met with when utilising certain agents. Such agents will in some animals induce ordinary squamous epitheliomas, often with a basal-celled tendency, or benign sebaceous-celled tumours, and sometimes the intermixed type of tumour referred to.

Fig. 5 shows a pure basal-celled growth from the same group of animals.

Figs. 6 and 7 show another of these intermixed tumours in the early stage before the sebaceous cells have disintegrated to form the cyst-like spaces seen in Fig. 3.

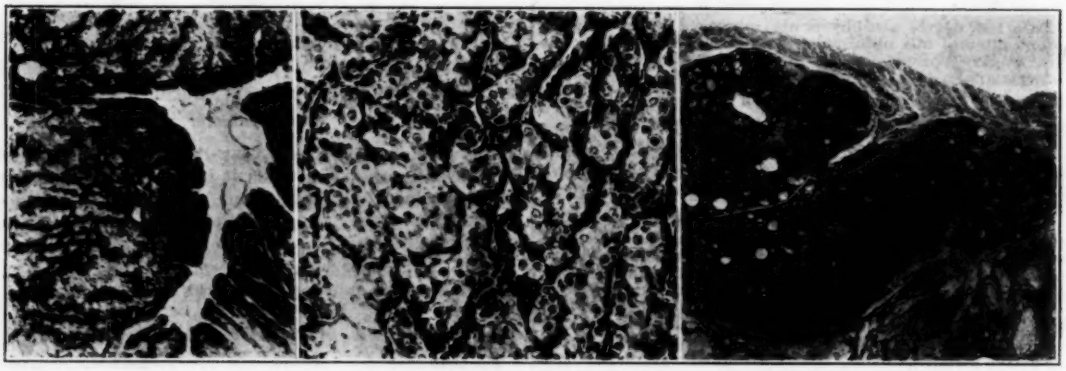
Photomicrographs of other varieties of experimental tumours, including benign sebaceous adenomas

* See Twort, C. C., and Twort, J. M.: Relative Potency of Carcinogenic Tars and Oils, Jour. of Hyg., 1930, xx., 373; and Carcinogenic Potency of Mineral Oils, Jour. Indust. Hyg., 1931, xiii., 204.

induced by our agents, have been previously published.[1]

In order to evaluate these observations we must consider for a moment the biological significance of the particular agents we have been utilising. Oleic acid is of course a constituent of practically all fats originating from animals and plants, and it is important to bear in mind that it is an unsaturated fatty acid not very distantly related chemically to the olefins. Consequently we shall expect this acid to be present at some time or other during the decomposition of fatty organic tissues, and it requires no elasticity of the imagination to visualise its possible importance as regards the genesis of many cancers. If oleic acid is capable of inducing tumour-formation of the sebaceous cells and of the surface epithelial cells of the skin, we see no logical reason why it should not act similarly on other epithelial tissues. We cannot however, in our opinion, argue along the same lines as regards our mineral oils and tars. In so far as we are here dealing with agents which are soluble in fats and most ordinary organic solvents, it is not surprising that they are able to penetrate the skin and thereby influence the basal cells, &c. On the contrary, because they are insoluble in water we should not expect them to influence mucous membranes which are mostly bathed in mucus, for we expect the mucus effectively to prevent even surface contact of a mineral oil with the living cells. Although we have examined many thousands of animals, among which some 12,000 have been bearing skin tumours, we have in no single instance met with a tumour of the mucous membranes. It is of some significance that we have no record of tumours of tongue or palate when one remembers that it is the habit of mice to clean the back with the paw and to remove the agent from the latter with the tongue. On the other hand, it must also be remembered that we have no record of an internal tumour following treatment with oleic acid, but of course when the animals ingest the acid we are in the presence of a natural substance in a natural situation (in food), and it is presumably dealt with by the digestive juices of the alimentary tract in the ordinary way. We must mention a tumour of the stomach which has recently come to hand, although we have little doubt that it is a rare form of spontaneous tumour.

FIGS. 1 2 3



Malignant sebaceous tumour. (× 82.) Malignant sebaceous tumour. (×165.) Cystic basal epithelioma. (× 19.)

The tumour was a large squamous-celled epithelioma of the forestomach of a mouse which had been painted for 20 weeks with a watery solution of a mixture of chrysene ammonium and sodium sulphonate, and subsequently injected subcutaneously four months previous to death with a synthetic tar sodium and ammonium sulphonate. The tumour appeared to have its origin at the junction of the fore and glandular part of the stomach, and was invading the liver and adjacent organs.

CANCER OF THE BREAST

The possible part which may be played by oleic acid in the genesis of cancer of the breast has been the main reason why we have studied closely the action of the acid on the skin, and especially on the sebaceous cells. Sebaceous cells and breast cells are modified epidermal cells, and from the biological point of view the secreting cells of the breast are nothing more than sebaceous cells which have differentiated along another line in order to perform a special function. We have not meanwhile attempted to induce cancer of the breast by the application of oleic acid, for although successful tumour induction would be of interest we feel that negative results would be of little value, because we could not perform an experiment under the conditions occurring naturally. It is not easy to surmise the actual quantity of acid which would be necessary for the induction of a breast carcinoma; it would probably be smaller than that required to induce sebaceous tumours, and very much smaller than the quantity necessary to induce malignant tumours of the surface epithelium.

It has been conclusively shown statistically that the female breast which is not allowed to function normally is more liable to develop cancer than one to which a child has suckled over a definite period of time, and then allowed a lengthy period of rest until a subsequent child is born. Anything contrary to nature such as no lactation, under-lactation, and over-lactation, or some other extraneous factor interfering with the natural course of events may predispose to cancer, and in view of our present knowledge it is not difficult to understand why. We can only discuss under-lactation here.

In the event of no lactation or under-lactation we shall have decomposition of the excretory products and consequent liberation of free oleic and other fatty acids. The products of decomposition will be unable to find their way to the surface and will lie in situ in the gland acini and ducts until removed by the body fluids and wandering cells of the host. If, as we surmise, the oleic acid and probably also related fatty acids act carcinogenically on the secreting

cells of the breast we must not lose sight of the fact that they may be operating in particularly favourable surroundings. Milk is necessarily a carrier of abundant growth stimulins and it is certainly not deficient in vitamins, so that we are bound to assume an extremely favourable environment for the acid to exert its malignant influence. Applications of lactic and butyric acid to the skin have resulted in no obvious hyperplasia of the surface epithelium, in fact we have found it somewhat atrophied in many animals treated with these acids. In our experiments there was also no apparent effect on the sebaceous cells.

CHEMICAL ASPECTS

On attempting to correlate carcinogenicity with chemical constitution one soon has to admit that some of the carcinogenic agents have very little in common.

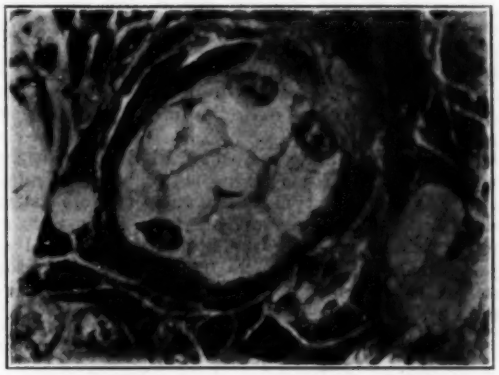
In the case of mineral oils we find that potency runs roughly parallel with unsaturation, but the nature of the unsaturated constituents is unknown. Chrysene and 1·2 : 5·6 dibenzanthracene are aromatic hydrocarbons consisting of conjugated benzene rings, and give direct evidence of their unsaturated character only in a few reactions. Oleic acid is unsaturated in the strict sense of the word, having a true double bond in the middle of a straight carbon chain, which also carries a terminal carboxyl group.

So far the only common factors appear to be a fairly large number of carbon atoms directly united to one another, and a certain degree of unsaturation, ethylenic or aromatic. Such a description includes too great a variety of compounds to be of much value, and any attempt to narrow it down appears to exclude substances which have a definite, if slight, carcinogenic action. This variety is rather bewildering in view of the specificity of so many biological reactions —e.g., the different physiological effects of *d* and *l* forms of so many substances, the activity of vitamin D compared with ergosterol, or the importance of the length of chain in determining the effectiveness of chaulmoogric acid and its homologues against *B. lepræ*. On the other hand there are many different types of hypnotics and local anæsthetics.

Further difficulties arise in connexion with the combination of agents. Thus we have the following results :—

1. Oleic acid alone gives rise to a few benign tumours.
2. Chrysene in oleic acid, after long application, produces tumours of the surface epithelium which become malignant in a relatively short time.
3. Chrysene in liquid paraffin is much less potent than in oleic acid.
4. The synthetic tars B/10 and B/19, applied in liquid paraffin or chloroform, are very potent.
5. Addition of oleic acid to these tars reduces or at any rate does not increase their potency.

FIG. 7



Sebaceous cell inclusions. (× 1000.)

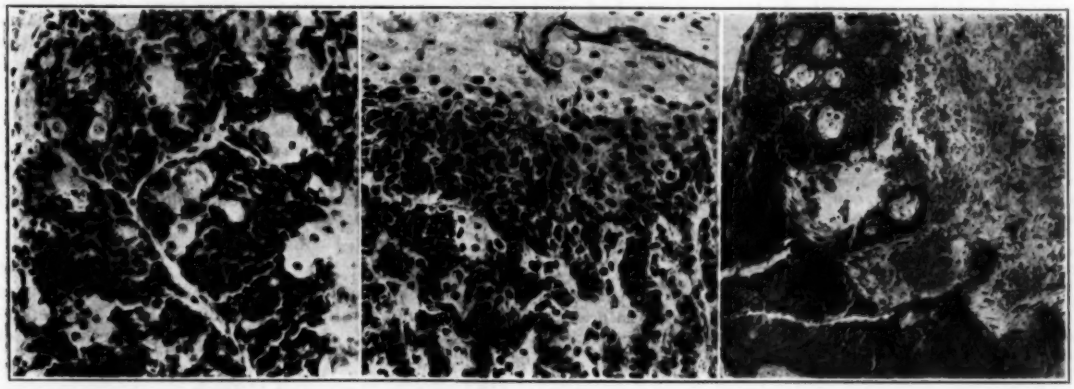
6. A 0·15 per cent. solution of tar B/19 in oleic acid has a potency not far removed from a similar solution of chrysene.

Perhaps the simplest hypothesis is that two factors (or two types of factors) are involved. These may be tentatively described as (*a*) a sensitising factor and (*b*) a stimulating factor which promotes cancerous development of the sensitised cells. One or both of these factors may be present within the organism as a result of pathological conditions, or perhaps normally to a slight extent. On this view the above results can be interpreted as follows :—

1. Oleic acid is a rather weak "sensitiser."
2 and 3. Chrysene is a fairly powerful stimulant.
4. The synthetic tars, which are complex mixtures, contain both factors.
5 and 6. Oleic acid is a weaker "stimulant" than those present in the tar and acts as a diluent for them.

To obtain direct evidence for the assumption made in Case 4 it would be necessary to resolve a tar into two fractions whose relation to one another would be analogous to that of chrysene and oleic acid. This has not been satisfactorily

FIGS. 4 5 6



Cystic basal epithelioma. Sebaceous cell inclusions. (×165.)

Early basal malignancy. (×165.)

Small basal cell tumours. Sebaceous cell inclusions. (× 82.)

achieved, but one experiment gave a hint of the possibility.

A fraction was separated from tar B/19 by condensation with ethyl oxalate and subsequent regeneration of the hydrocarbons. This fraction was only slightly toxic. The residue was nearly as potent as the original, but there was a curious lag before any tumours appeared, compared with the re-mixed extract and residue.

In the case of the mineral oils it has sometimes been found that the residues after extraction with methyl sulphite or alcohol produce fewer tumours than the original, but about the same number become malignant. This suggests the preferential removal of a sensitising factor, since only the initial processes are impeded.

The available data do not permit of any useful attempt to correlate sensitising action with chemical constitution. We may hazard a guess that unsaturation is an important factor, but it is impossible at present to say whether the action is chemical or physical. In the case of the "stimulating" factor, however, recent developments in other fields have opened up interesting possibilities.

GROWTH-STIMULANTS

Since active proliferation is a characteristic of cancer cells we have long suspected some relationship between carcinogenic agents and normal growth-stimulants. We therefore regard the chemistry of vitamins and the hormones of pregnancy, &c., as being relevant to our problem.

From a chemical standpoint the best known vitamins are the fat-soluble A and D. Of these, vitamin A appears to be closely related to the terpenes, and probably consists largely of a long, branched carbon chain. We know no carcinogenic substance of this type though analogous substances may be present in the oils. Vitamin D is a member of the sterol group being formed by the isomerisation of ergosterol under the influence of suitable irradiation.

The fact that dehydrogenation of sterols under vigorous conditions produces chrysene I.[2] was suggestive, but it was generally believed that the sterol nucleus was represented by II. and that the formation of chrysene involved a profound rearrangement.

I II III

Diels obtained other products under milder conditions and attributed to these formulæ of the fluorene and indene types. In view of this, coupled with Kennaway's observation that cholesterol gives a carcinogenic tar on heating, admittedly to a high temperature, we suspected that hydrocarbons of these types might be the active agents in our tars. The condensation with ethyl oxalate, referred to above, was designed to test this hypothesis, but the extract was relatively inactive.

Recently however, the older view of the structure of sterols has met with much criticism, and the most recent suggestion is that the carbon skeleton of chrysene is present in the original sterol. Bernal [5] has produced evidence for this from X ray and optical measurements, while Rosenheim and King [4] have advocated it on chemical grounds.

From the urine of pregnancy three characteristic substances have been isolated by various workers—viz., pregnandiol, ketohydroxyœstrin, and trihydroxyœstrin. Of these, pregnandiol has no marked physiological action, but ketohydroxyœstrin produces œstrus in immature or ovariectomised animals and the same result is obtained to a smaller degree with trihydroxyœstrin. The œstrin derivatives are formed in the ovary in response to stimulation by the anterior pituitary hormones, and it is believed that they control the earlier stages of the œstrous cycle, inducing the pro-œstrus growth of the uterine tissues and, in some species, a characteristic modification of the epithelial cells of the vagina. These substances are found at all times in normal female blood, but the amount varies during the œstrous or menstrual cycle and increases greatly during pregnancy.

The structure of the œstrin derivatives has been studied by several workers, employing chemical methods, X ray and optical measurements,[5] and the properties of monomolecular films.[6] The results all favour a nucleus of the phenanthrene type III. It will be observed that chrysene contains this nucleus. Pregnandiol is a sterol.[7] It is crystallographically related to ergosterol on the one hand and to the œstrin derivatives on the other (Bernal). It may prove to be an intermediate stage in the formation of physiologically active substances.

The hypothesis that chrysene is the basis of the sterol nucleus has not been generally adopted, so it would be unwise to base too many speculations on it, but from our point of view it is very attractive and we await further developments with great interest. Kennaway and Cook [8] have recently suggested that cancer-producing substances may arise in the body by abnormal sterol metabolism. We have been led into similar speculations from a rather different viewpoint. If the latest formulæ prove to be correct it will mean that vitamin D, œstrin and the carcinogenic substances chrysene, and the 1·2 benzanthracene derivatives all contain the carbon skeleton of phenanthrene. To what extent this may determine their growth-promoting properties remains an open question.

The point we wish to emphasise is the possible significance of the association of growth-stimulins, or substances capable of transformation into growth-stimulins, with oleic acid, with special reference to breast cancer. It is perhaps significant that the cholesterol content of the blood increases greatly during pregnancy, diminishing towards the end and during lactation. This hypercholesterinæmia passes off more quickly in mothers who suckle their children than in those who do not, owing to the secretion of cholesterol in the milk. It is also of interest to note that there are disturbances of the fat metabolism during pregnancy, and that the fœtal liver stores up fat which is less saturated than connective tissue fat. We are not prepared to be dogmatic about the relevance of these observations. We do feel, however, that facts of this nature should be taken into account, and that only by combining observations taken from a number of different fields, along some such lines as we have suggested in this paper, shall we reach a solution to problems connected with our own researches.

Our interest was recently aroused by seeing a report of a paper by Taylor [9] in which it was stated that petroleum oil or mineral oil prevented the reproduction of animals even when wheat-germ oil was included in the diet. Unfortunately we have only been able to obtain abstracts of this paper, but so far as we can judge from these, the author's results are somewhat contrary to our own observations.

SUMMARY

It is suggested that the chief ætiological factor concerned in carcinoma of the breast is a group of compounds containing the carbon skeleton of phenanthrene acting in conjunction with oleic or other unsaturated fatty acids.

The photographs are by R. Combes.

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THE TREATMENT OF PERNICIOUS ANÆMIA BY MARMITE

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The publication by Lucy Wills [1] of a series of cases of "pernicious anæmia" of pregnancy and "tropical anæmia" successfully treated by marmite raises many questions of importance. It is unnecessary for our present purpose to discuss the identity of her cases with ordinary pernicious anæmia. There is no question about their close similarity, and her results suggested the possibility of using marmite as an alternative or supplement to liver or liver extracts in ordinary pernicious anæmia. Stanley Davidson [2] has already published the results in three cases. One case did well and two did not. Davidson suggests that tropical and non-tropical macrocytic anæmia are different conditions, that the anti-anæmic factor in liver and vitamin B are not related, and that any benefit following the use of vitamin B is due merely to improving the efficiency of the gastro-intestinal tract.

MAINTENANCE CASES

Since the publication of Wills's paper I have treated all my "maintenance" cases with marmite. Without exception these have done well. I show the results of eight such cases, treated by marmite only, for periods of from seven to twelve months. I have equally satisfactory results in a further series of six cases treated by marmite for periods under six months. Other cases are referred to which bring the total up to 19.

Table of Cases of Old-standing Pernicious Anæmia treated (after recovery) with Marmite only for not less than seven months.

Case.	Sex.	Age.	Date of admission.	R.B.C.	Hb.	Date marmite started.	R.B.C.	Hb.	Date last observed.	R.B.C.	Hb.
A	F	34	4/10/30	1·5	32	24/6/31	4·5	82	29/6/32	4·1	80
B	M	43	6/1/30	1·5	38	1/7/31	4·2	76	2/8/32	4·2	90
C	M	60	4/12/29	2·1	56	29/7/31	4·6	96	20/7/32	5·3	102
D	M	55	22/3/29	0·7	17	11/10/31	6·3	100	16/3/32	6·2	102
E	M	52	20/2/28	1·5	38	15/10/31	5·1	92	15/7/32	5·2	100
F	M	56	18/3/31	2·0	50	21/10/31	5·0	92	13/8/32	5·7	100
G	F	59	25/6/30	1·1	28	9/12/31	4·9	90	6/7/32	4·9	92
H	F	58	18/8/31	1·6	34	20/1/32	4·5	80	15/8/32	4·8	88

R.B.C.—Red cells in millions per c.mm.
Hb.—Hæmoglobin as percentage of normal.

The Table summarises the eight maintenance cases treated with marmite. Several were originally cases of great severity, and most of them have already been published [3] in greater detail. The date of admission to my ward is not to be taken as any guide to the previous duration of illness. Case D had been transfused on two occasions. The maintenance dose of marmite has never exceeded ℥i thrice daily. In a few cases it is only ℥i twice a day.

PRIMARY CASES

The following are notes of primary cases treated with marmite only.

Case 1.—Female, married, aged 37, admitted Nov. 18th, 1931; stated she had not felt fit since a puerperal hæmorrhage ten years before. Lately had severe breathlessness, palpitation, and weakness. Blood showed 1·7 million corpuscles per c.mm.; average size increased; Hb., 40 per cent.; leucocytes, 5000. Van den Bergh direct positive (weak, delayed). Icteric index, 9. Wassermann negative. Achlorhydria. Some tingling of feet and impairment of cutaneous sensibility. Marmite was administered in half-ounce doses thrice daily. A reticulocyte response of 20 per cent. occurred on the eighth day, and increased to 25 per cent. on the tenth day, and remained above 10 per cent. for eight days. On Dec. 15th she had 50 per cent. of hæmoglobin, and owing to domestic trouble went home. On April 26th, 1932, she had 2·5 million corpuscles, with 60 per cent. of hæmoglobin. Her doctor states she is now in good health.

Case 2.—Male, aged 53, admitted June 6th, 1932. Suffered from weakness and dyspepsia for a year, increased weakness and giddiness for three weeks. Red corpuscles, 2·1; Hb., 52; leucocytes, 6000; films typical. Van den Bergh positive delayed direct. Icteric index, 12. Wassermann negative. Achlorhydria. No nerve symptoms. Marmite, a tablespoonful thrice daily, was started next day. Reticulocytes were 6·5 per cent. two days later, and 9 per cent. on the fourth day. Progress was uneventful but the blood progress showed the very unusual feature of an increase of hæmoglobin more rapid than the increase of corpuscles. Patient was discharged on July 19th with 3·5 million red corpuscles and 95 Hb. The marmite dosage was reduced to ℥i t.i.d. On August 3rd he reported, feeling fit, with 4·5 red cells and 98 Hb.

CASE OF RELAPSE

The following was a relapse case treated with marmite only.

Case 3.—Male, aged 59, admitted March 17th, 1932. Two years previously became easily tired, suffered from giddiness, tinnitus, tingling in the limbs, and assumed a yellow colour. In December, 1930, he collapsed in an Aberdeen post office, and was conveyed to the Royal Infirmary, where he was under the charge of Prof. Stanley Davidson. He was treated with Ventriculin and, later, with liver extract. About five months ago he became careless about taking liver, and symptoms returned.

On admission he showed a yellowish pallor; red corpuscles numbered 1·3; Hb., 31 per cent.; leucocytes, 4600; reticulocytes, 1 per cent. Spleen was slightly enlarged. Pyorrhœa. Achlorhydria. Positive van den Bergh. Icteric index, 20. Tingling of legs. Sluggish knee-jerks. Some impaired sensibility. On March 19th, 1932, the teeth were extracted and a sharp hæmorrhage followed. Red cells fell to 1·05 and Hb. to 25. Marmite ℥ss t.i.d. was begun on the 21st. By the 28th reticulocytes had reached 11 per cent.; red corpuscles were 1·3 and Hb. 27. A month later red cells were 3·2 and Hb. 67. Two months later red cells were 3·9; Hb. 81. The marmite dose was reduced to a teaspoonful thrice daily. On July 20th the red cells were 3·7, and Hb. 80. On August 17th the red cells were 4·0, and Hb. 80.

LIVER EXTRACT FOLLOWED BY MARMITE

The following cases were treated with marmite after a preliminary course of intravenous liver extract.

Case 4

Date in 1932.	Blood examination. R.B.C.	Hb.	Reticulocytes per cent.	Treatment.
April 22nd	1·6	34	0·6	Pernæmon* 5 c.cm. daily.
„ 27th	1·5	36	8·0	Marmite ℥ ss t.i.d.
„ 28th	—	—	33·0	—
May 9th	3·0	66	—	—
„ 21st	4·1	70	—	—
„ 31st	5·0	98	—	Marmite ℥ i t.i.d.
July 29th	5·3	98	—	„ ℥ i bis in die.

*Liver extract (Crookes) for intravenous use.

Case 4.—Male aged 50. Complained of weakness and breathlessness for four years. Sore tongue. Prickling sensation in limbs. Patient had a yellowish colour. Spleen was just palpable. Achlorhydria. Reflexes normal. Wassermann negative.

Case 5.—Male aged 61. Complained of breathlessness and dyspepsia. Showed a pale yellow colour. Spleen not

enlarged. Achlorhydria. No nerve symptoms. Wassermann negative.

CASE 5

Date in 1932.	Blood examination.			Treatment.
	R.B.C.	Hb.	Reticulocytes per cent.	
May 7th	2·3	42	0·5	Pernæmon 5 c.cm. intravenously daily.
„ 16th	2·8	62	3·3	Marmite ½ ss t.i.d.
June 3rd	4·8	95	—	„ ½ i „

These cases seem to prove that marmite is efficacious in the treatment of the average case of pernicious anæmia. The dosage employed has been a tablespoonful thrice daily while the patient is ill, and a teaspoonful twice or thrice daily to maintain health. Although marmite has been found to cause nausea and vomiting, we have only once encountered difficulty in getting a patient to take it, and it was as difficult to get her to take liver or liver extract. The marmite may be dissolved in warm water like a meat extract, may be spread on bread and butter, or may be stirred into milk. Most patients find it palatable and welcome it as a change from liver. It is a pleasant solution to the difficulty that patients in remote districts often find in obtaining liver, and in getting liver in good condition in warm weather. Moreover, marmite would appear to be a useful alternative to liver in gouty, rheumatic, and high pressure subjects.

EFFICACY OF MARMITE AS COMPARED WITH OTHER SUBSTANCES

In this connexion all that can be discussed is the efficacy of different remedies in the dosage usually employed.

I maintain [3] that transfusion of a pint or thereby of compatible human blood is the most powerful stimulus to hæmatogenesis that can be employed, and the transfused corpuscles may save life in emergency. Nearly as efficacious as transfusion (save for the supply of hæmoglobin) is intravenous injection of an active preparation of liver in the recommended dosage. It is an advantage to start off acute cases with intravenous injection because of the great rapidity of action and the consequent saving in hospital beds.

There is, I think, little to choose between the effects of whole liver, liver extract, stomach, stomach extracts, and marmite given by the mouth. One point of difference in the case of marmite emerges in the primary and relapse cases, and that is the persistence of a high colour-index. On liver treatment corpuscles are regenerated more quickly than hæmoglobin, so that the colour-index falls. On marmite the hæmoglobin content outstrips the increase of corpuscles, and the blood picture tends to remain macrocytic even when the hæmoglobin may be so high as 60 per cent. This feature may be regarded as unfavourable to marmite, but the end-result is just as good as that effected by liver.

A point of practical importance is that no extract seems to be so efficacious in the cord degeneration of pernicious anæmia as whole liver.

The question of the vitamin content of commercial liver and stomach preparations, and the rôle of these vitamins in hæmatogenesis has been much discussed (Gilroy [4] and others). It is of interest that an anti-anæmic factor of purely vegetable origin now falls to be investigated.

SUMMARY

Observations on 19 cases of pernicious anæmia indicate: (1) That the administration of marmite in small doses is an adequate means of maintaining cases of recovered pernicious anæmia in good health. (2) Marmite in large doses is a satisfactory remedy for primary and relapse cases of pernicious anæmia of moderate severity. (3) Time may be saved in moderately severe cases by a preliminary course of intravenous injections of liver extract given daily for five or seven days. (4) In very severe cases intravenous injection of liver extract is necessary, and in the most severe cases transfusion of blood is imperative.

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A CONSERVATIVE TREATMENT OF ECLAMPSIA

REPORT OF ONE HUNDRED CASES *

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THE cases on which this paper is based comprise the patients suffering from eclampsia who were admitted to St. Mary's Hospital, Whitworth-street, Manchester, during the three and a half years before February, 1932. In this period the post of resident obstetric surgeon was held consecutively by us, and we are indebted to the honorary staff for permission to present this report.

We propose to review briefly the treatment of eclampsia at the hospital during the 20 years previous to the adoption of the present method, to explain the reasons for the change made in 1928, and to compare results; for true comparative data regarding treatment in this disease can be obtained only by studying the results of different methods carried out in one district, preferably in one institution. It is only necessary to compare the types of case described as severe in various different countries, to realise that what may be considered severe in one place is looked upon as mild in another.

The cases admitted during the years 1908 to 1928 fall, as regards treatment, into two very definite groups. No routine method was in vogue before 1920, but the main features were purgation and diaphoresis, with occasional resort to Cæsarean section and accouchement forcée. Early in 1920, however, the Dublin method was adopted at St. Mary's Hospital, and Table I. shows that the maternal mortality fell from 35·6 per cent. to 19·8 per cent.

During the first eight months of 1928, however, 28 cases were treated with 8 deaths, a mortality of 29·6 per cent. It was felt, therefore, that the results of the Dublin method in our hands were not all that could be desired, the chief objection being that the repetition of colon lavages advised in a severe case appeared to produce a considerable degree of shock. The culminating point was reached

* Read before the North of England Obstetric and Gynæcological Society.

when in one case one of us was standing during a lavage with a finger on the patient's pulse and found that it suddenly disappeared; although restoratives were immediately applied, the heart could not be made to beat again.

TABLE I.—*Cases Treated, 1908 to August, 1928.*

Year.	Total.	Deaths.	Per cent.	Year.	Total.	Deaths.	Per cent.
1908 ..	14	5	35·7	1920 ..	47	8	17·0
1909 ..	12	8	66·7	Apr.–Dec.			
1910 ..	20	5	25·0				
1911 ..	25	3	12·0	1921 ..	37	11	29·7
1912 ..	38	11	28·9	1922 ..	45	6	13·3
1913 ..	49	21	42·9	1923 ..	37	4	10·8
1914 ..	45	15	33·3	1924 ..	28	6	21·4
1915 ..	39	17	43·6	1925 ..	34	7	20·6
1916 ..	51	15	29·4	1926 ..	34	7	20·6
1917 ..	35	15	42·9	1927 ..	34	9	26·5
1918 ..	39	15	38·5	1928 ..	28	8	28·5
1919 ..	54	18	33·3	Jan.–Aug.			
1920 .. Jan.–Mar.	9	5	55·5				
Total ..	430	153	35·6	Total ..	324	64	19·8

Outline of the Treatment

Other methods were considered, and naturally we were much impressed by the results obtained by Stroganoff. On theoretical grounds, however, we were not inclined to follow his technique absolutely. Our criticism was, that as a routine treatment of a pregnancy toxæmia is and always has been by elimination, it seemed irrational to discard eliminative measures entirely on the appearance of a fit, and thereafter to proceed on purely sedative lines. We decided, therefore, to try to combine the two methods, and in view of the fact that heart failure is the cause of death in many cases, a routine four-hourly heart stimulant seemed desirable. The method of procedure was as follows:—

Hours. TREATMENT A

0. Morphine sulph. gr. ¼, coramine 1 c.cm.
½. Gastric lavage, leaving in stomach castor oil 2 oz. and croton oil 2 minims. Colon lavage, leaving in mag. sulph. 2 oz. (anæsthesia if required).
1½. Chloral hydrate grs. 30 per rectum or mouth.
3. Morphine sulph. gr. ¼.
4. Coramine 1 c.cm.
7. Chloral hydrate grs. 30.
8. Coramine 1 c.cm.
12. Coramine 1 c.cm., chloral hydrate grs. 20.
16. Coramine 1 c.cm.
20. Coramine 1 c.cm., chloral hydrate grs. 20, and later chloral hydrate grs. 20, 8-hourly, if required.

Coramine is a Ciba preparation of camphor and has proved quite satisfactory. The patient was treated in a darkened labour ward and precautions taken to ensure absolute quietude. Strict attention was paid to keeping the patient's air passages clear, and oxygen was resorted to in the presence of cyanosis.

The results obtained in the first few cases were distinctly encouraging, and the method was deemed worthy of an extended trial. Late in 1929, however, by which time some 40 cases had been treated, we read a paper by O. H. Schwarz and W. J. Dieckmann,[1] advocating the use of intravenous glucose and intramuscular magnesium sulphate as follows:—

(1) Magnesium sulphate, 10 c.cm. of 25 per cent. solution intramuscularly on admission, and 5 c.cm. after each convulsion.

(2) Colon and gastric lavage leaving 60 c.cm. of saturated solution of magnesium sulphate in stomach.

(3) Glucose 1000 c.cm. of 20 per cent. solution intravenously, two, three, or four times daily, depending on the case.

[1] Amer. Jour. Obst. and Gyn., 1929, xviii., 515.

It was suggested that this might form a useful addition to our routine which now became:

Hours. TREATMENT B

0. Morphine sulph. gr. ¼, coramine 1 c.cm. Magnesium sulphate 10 c.cm. of 25 per cent. solution intramuscularly, and 5 c.cm. after each convulsion. Dextrose 1000 c.cm. of 20 per cent. solution intravenously repeated if necessary.
½. Gastric lavage, leaving in stomach castor oil 2 oz. and croton oil 2 minims. Colon lavage, leaving in colon mag. sulph. 2 oz. (anæsthesia if required).
1½. Chloral hydrate grs. 30 per rectum or mouth.
3. Morphine sulph. gr. ¼.
4. Coramine 1 c.cm.
7. Chloral hydrate grs. 30.
8. Coramine 1 c.cm.
12. Coramine 1 c.cm., chloral hydrate grs. 20.
16. Coramine 1 c.cm.
20. Coramine 1 c.cm., chloral hydrate grs. 20, and later chloral hydrate grs. 20, 8-hourly, if required.

Apart from this modification the whole series of 100 cases have been treated on identical lines. Our attitude has been entirely conservative, and in cases where the patient was in labour, the eclampsia, of itself, was not considered an indication for operative interference of any kind. When, however, a complication arose it was dealt with on ordinary lines, as in a non-eclamptic case.

No case was discharged from hospital undelivered. In a few cases induction of abortion or labour was carried out on account of persistent albuminuria after recovery from the eclampsia.

The mode of delivery was as follows:—

Natural forces	54	Forceps	17
Induction followed by delivery by natural forces	7	Version and extraction.	1
		Breech extraction ..	1
		Cæsarean section ..	1
Abortion	8	Craniotomy	1
Induced abortion ..	3	Five cases died undelivered	

Comparison of Results

The results of the various methods are set out in Table II.

TABLE II

MATERNAL MORTALITY

	Total.		Deaths and per cent.
1908 to Mar., 1920 ..	430	No routine method	153 (35·6)
Mar., 1920, to Aug., 1928	324	Dublin method ..	64 (19·8)
Sept., 1928, to Feb., 1932	100	Present method..	7 (7·0)
Under treatment A ..	40	.. ..	4 (10·0)
,, ,, B ..	60	.. ..	3 (5·0)

(Brief notes on the fatal cases will be found at the end of this paper.)

FŒTAL MORTALITY

All cases.	Abortion, stillborn, neonatal deaths. (per cent.)	Well on discharge. (per cent.)
1908 to Mar., 1920	64·3	35·7
Mar., 1920, to Sept., 1928 ..	52·1	47·9
Sept., 1928, to Feb., 1932 ..	54·0	46·0
Treatment A	60·0	40·0
,, B	50·0	50·0
Excluding Cases of Postpartum Eclampsia		
1908 to Mar., 1920	67·9	32·1
Mar., 1920, to Sept., 1928 ..	69·8	30·2
Sept., 1928, to Feb., 1932 ..	63·3	36·7
Treatment A	67·7	32·3
,, B	60·4	39·6

Excluding 11 Abortions and 18 Postpartum Cases in the Series of 100

	Stillborn, neonatal deaths. (per cent.)	Well on discharge. (per cent.)
Treatment A and B— 71 cases	57·7	42·3
Treatment A— 25 cases	56·0	44·0
Treatment B— 46 cases	58·7	41·3

This Table shows that the maternal mortality has fallen considerably but the fœtal mortality only slightly since adoption of the present routine.

We now propose to review certain aspects of the 100 cases.

Classification of Cases

Clinically, cases of eclampsia are often grouped under three headings: (*a*) those who will recover under any treatment; (*b*) those who will die despite the best treatment; and (*c*) an intermediate group who are amenable to good treatment. A classification of this kind can, however, hardly be considered scientific, and we propose in this paper to group the cases under two headings only—namely, severe and mild.

We have considered as severe any case where: (*a*) coma was present; or (*b*) the number of convulsions exceed six; or (*c*) the temperature rose above 103°. All other cases are grouped as mild.

Using this classification we find:—

Mild: 58 cases. Average number of convulsions 2·7 per cent. Mortality nil.

Severe: 42 cases. Average number of convulsions 8·0 per cent. Mortality 7 = 16·6 per cent.

The following is a comparison of results in severe cases by treatment A and treatment B.

Treatment A.—19 cases. Average number of convulsions 8·9. Mortality 4 = 21 per cent.

Treatment B.—23 cases. Average number of convulsions 7·6. Mortality 3 = 13 per cent.

It will be seen that the mortality was definitely lower under treatment B, but that the cases were probably not quite so severe.

CONVULSIONS

The average number of convulsions in all cases was 4·3 per cent. It will be recognised, however, that the total number of fits per case must be to a certain extent influenced by the efficiency or otherwise of treatment. In relation to this, we may state that convulsions are as a rule controlled completely within a few minutes of the intravenous administration of dextrose. The average number of convulsions in fatal cases was 15·5. The highest number followed by recovery was 22. One patient had convulsions continuously for 1½ hours but recovered.

Coma was present in 36 cases, of whom 6 died. Rise of temperature to 103° was recorded in 8 cases, 2 of whom died.

Œdema was present in 79 cases, 6 of whom died. It is interesting to note that the patient who died, having neither œdema nor coma, had a temperature of 105°.

STAGE OF PREGNANCY AND PARITY

No case occurred before the 20th week, the incidence being as follows:—

20–24 weeks	.....	3 cases	..... 1 death
25–28 ,,	.....	14 ,,	..... 0 ,,
29–32 ,,	.....	12 ,,	..... 3 deaths
33–36 ,,	.....	23 ,,	..... 1 death
37–40 ,,	.....	48 ,,	..... 2 deaths

The incidence of eclampsia would seem to increase steadily during the latter months of pregnancy. The relationship to parturition was:—

Antepartum	.. 43 cases.	Mortality 3	(6·9 per cent.)
Intrapartum	.. 29 ,,	,, 3	(10·3 ,, ,,)
Postpartum	.. 18 ,,	,, 1	(5·5 ,, ,,)

This corresponds with the usually accepted ideas both as regards frequency and mortality in the three types of case.

Of the 100 patients, 72 cases were primigravidæ, of whom 4 died; 10 cases were secundiparæ, of whom 1 died; and 18 cases were multiparæ, of whom 2 died. This agrees with most published statistics to the effect that the disease is most fatal in multiparæ.

ALBUMINURIA AND BLOOD PRESSURE

The relationship of the eclampsia to albuminuria may be shown as follows:—

On admission.—Grs. 2 or over by albuminometer, 94 cases; trace of albumin, 1 case; no albumin, 5 cases.

On discharge.—Registrable by albuminometer, 3 cases; trace of albumin, 12 cases; urine clear, 78 cases.

None of the cases without albumin died. This is contrary to the general impression that absence of albumin is a very bad sign. We hope to follow up all the cases at some future date.

The *blood pressures* showed considerable variation, the average systolic pressure being 150·5 mm. Hg. The lowest pressure recorded was 93 and the highest 230. The mean figures in severe and mild cases approximated closely, being 150·2 in severe cases and 150·7 in mild. The average pressure in cases who died was 146·6. The average blood pressure on discharge was 128·5. The suggestion offered by these observations is that the blood pressure does not serve as a reliable aid to prognosis.

Antenatal Care

During the period under review 9116 patients attended the St. Mary's Hospital antenatal clinic. Of these, 7 developed eclampsia, but all recovered under treatment. Short notes of these are as follows.

No. 35. Admitted from clinic owing to severe albuminuria, had one fit only, four hours later, following enema. Responded to treatment and did not go into labour. Induction by bougie six days later. Normal delivery. Urine clear on discharge.

No. 44. Admitted from clinic owing to severe albuminuria, went into labour after enema, was delivered, and had two fits, postpartum. Responded to treatment. Urine clear on discharge.

No. 49. Admitted from clinic owing to severe albuminuria, went into labour after an enema, was delivered, and had one fit postpartum. Responded well to treatment. Urine clear on discharge.

No. 65. Had not attended clinic for five weeks, urine clear at last visit. Postpartum eclampsia, seven fits. Good response to treatment. Urine clear on discharge.

No. 84. A "District" case. Had attended the clinic three weeks previously, when the urine was clear. Postpartum eclampsia, eight fits. Responded to treatment. Urine clear on discharge.

No. 89. A "District" case. Last visit to the clinic was eight weeks previously. The urine was then clear. Postpartum eclampsia, six fits. Good response to treatment. Urine clear on discharge.

No. 93. Admitted from clinic owing to severe albuminuria at 34 weeks. Routine treatment was carried out for two weeks without any improvement, so labour was induced. Patient had one fit postpartum, but responded satisfactorily to treatment. Urine clear on discharge.

In three cases, therefore, the patient had not attended the clinic for some time, the urine on her last visit having been clear. All developed severe postpartum eclampsia. In two cases labour followed the institution of eliminative treatment for albuminuria. Both developed mild postpartum eclampsia. In one, antepartum eclampsia resulted within a few hours only of eliminative treatment being commenced. The patient did not go into labour, but was induced later. In the other case, eclampsia followed labour, induced for persistent albuminuria.

Regular antenatal supervision would seem, therefore, to be an excellent prophylactic against eclampsia.

The Fatal Cases

The following are brief notes on the fatal cases:—

CASE 27.—Patient, aged 27, admitted at 4.45 P.M. on June 11th, 1929, seven hours after the forceps delivery of her fourth child, which was stillborn. During pregnancy there had been several attacks of antepartum hæmorrhage.

Five fits after delivery but before admission. Blood and albumin found in the urine, the B.P. was 100/75. In spite of treatment she became rapidly worse, and died 5½ hours later.

Autopsy showed no abnormal features other than definite softening of the brain substance.

CASE 32.—A case of antepartum eclampsia at term in a primigravida aged 23. Patient was admitted at 9 P.M. on Sept. 8th, 1929, in deep coma. There was a history of her having had five fits, beginning five hours before admission. The urine became solid on boiling, œdema was present. The B.P. was 140/110. She improved under treatment, and on the 9th the fits ceased, she having had nine more after admission. She was conscious and commenced in labour that day. She was delivered of a stillborn child on the next day, labour having taken 14 hours. On the 11th complete suppression of urine became evident. The usual medical treatment was given, but the patient died on the 12th. Post-mortem examination was refused by relatives.

CASE 36.—A case of ante- and intrapartum eclampsia at 38 weeks in a primipara. Patient was sent in as a pre-eclamptic on Sept. 26th, 1929, with a history of five weeks' severe albuminuria, and during the pregnancy she had had several attacks of antepartum hæmorrhage. On admission she was vomiting, complaining of dimness of vision, epigastric pain, and blood was found in the urine in addition to albumin. She was given morphia, a purgative, and an enema, and at 8 A.M. on the 27th she had her first fit, and probably began in labour about the same time. Routine treatment was immediately commenced. The fits ceased at 7 P.M., and her condition improved until about 3 A.M. on the 28th, when the heart became irregular. The patient collapsed and died at 4.30 A.M. Post-mortem refused by relatives.

CASE 38.—Antepartum eclampsia at 24 weeks. Patient, a 3-para aged 24, was admitted at 7.30 A.M., Oct. 11th, 1929, in coma. There was a history of eight weeks' severe albuminuria, and fits at short intervals for five hours before admission. On admission the urine became solid on boiling, the temperature 102·4° F. Routine treatment was commenced. She had nine fits between 7.30 A.M. and 8.30 A.M. when the fits ceased. Despite the cessation of the fits, her condition became worse, pulmonary œdema being a prominent feature. Continuous oxygen was administered, but she died at 6.20 P.M. Post mortem refused by relatives.

CASE 43.—Antepartum and intrapartum eclampsia at 30 weeks in primipara aged 36. Patient was admitted at 3.45 A.M., Jan. 20th, 1930, with history of severe albuminuria for 10 days. She had, however, refused hospital treatment. Three fits occurred before admission and coma was present. Routine A treatment was begun on admission. By 11 A.M. she had had 13 more fits. Intravenous glucose was then given, after which she had three fits, the last being at 2.4 A.M. The glucose was repeated at 8.30 P.M. At 9.30 P.M. severe vomiting began. The temperature began to rise and she became collapsed, necessitating stimulants. Pulmonary œdema was present. Uterine contractions became evident about 8.30, and the temperature rose to 107°. The patient died at 2.40 A.M. on Jan. 21st, 1930. Post-mortem refused.

CASE 58.—Antepartum and intrapartum eclampsia at 30 weeks in 2-para aged 27. Patient was admitted unconscious at 10.30 A.M., August 23rd, 1930, with a history of sudden onset of blindness, severe headaches, and convulsions about 10 A.M. She had had three fits before admission. The urine was found to become solid on boiling; the B.P. was 160/120. Patient was conscious. Routine treatment was commenced, but the glucose was not given till later. She had 14 fits after admission to hospital, 7 before and 7 after administration of the glucose. The last fit was at 6.20 P.M. At 7.45 P.M. an extra colon lavage was given. About this time it was found that she had commenced in labour. At 9.15 the temperature rose to 107·4°, and the patient collapsed. Stimulants and oxygen were given, but she died at 8.10 on the next morning.

Post-mortem.—The liver was small and jaundiced in colour. Microscopically the cells showed much fatty degeneration, and there was some pericellular fibrosis. The kidneys were enlarged and deep red in colour. There was much desquamation of cells and loss of nuclei, both in the tubules and glomeruli. There were numerous casts.

CASE 91.—Intrapartum eclampsia at 31 weeks in a primipara aged 31. Patient was admitted on Oct. 8th, 1931, at 2.35 A.M., in a collapsed condition, with a history of five fits occurring in the five hours previous to admission. She had a weak irregular pulse. Temperature 104°. Blood pressure 140/90, the urine being solid on boiling. The routine treatment was commenced. She appeared to improve following the glucose saline at 3.15 A.M., and she had one further fit only, at 3.25 A.M. She collapsed again, however, and died at 3.40 A.M. Post-mortem refused.

Summary

A conservative treatment of eclampsia has produced an improvement in results at St. Mary's Hospitals, Manchester, the maternal mortality having been reduced to 7 per cent. in a series of 100 consecutive cases.

THE PHYSIOLOGY OF PROTEINURIA

AND ITS CLINICAL SIGNIFICANCE

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URINE from a healthy kidney does not normally contain more than a trace of protein, although Maclean [1] and others have found proteinuria in about 5 per cent. of apparently normal men. Proteinuria may be due to purely physiological conditions, especially those leading to renal venous stasis and to stimulation of the sympathetic nervous system. In disease, proteinuria is associated with nephritis, nephrosis, and other diseases of the kidneys, with cardiac disease associated with venous congestion, the "toxæmias" of pregnancy, fevers, &c. In many of these cases it has been demonstrated satisfactorily that the protein in the urine is identical with the albumin and globulin of the plasma, and it has been assumed that the kidneys allowed these to leak through, either because of local damage, or because of the poor conditions under which they were made to function. In recent years it has been several times suggested that it may be in some cases the proteins which are at fault, instead of the kidneys. Thus Epstein [2] has suggested that nephrosis is primarily a metabolic disorder, in which the proteins have become a waste product, and he has introduced the term "diabetes albuminuricus." Munk, Benatt, and Flockenhaus [3] consider that in lipoid nephrosis there is a change in the physico-chemical characters of the body colloids, and that the renal changes are secondary. Thomas, Schlegel, and Andrews [4] have suggested that the proteins excreted in nephritis are primarily derived not from the serum but from the liver, although serum proteins may accompany the others at later stages. Andrews, Thomas, and Welker [5] in a later paper state that "the presence of serum proteins in the urine in nephritis is due to their combination with other nitrogenous fractions of tissue origin, some of which are highly toxic." It is their belief that "this combination acts as a detoxicating mechanism, and that the elimination of this protein by the kidneys is due to alteration of normal serum proteins by their combination with other split products which render them foreign to the circulation."

The present paper is not concerned with the evidence on which these theories are based, but with the underlying idea which is common to all of them

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—namely, that a normal kidney can excrete a protein which is "foreign" or obnoxious to it. This opinion is widely held, in spite of the very great difficulties in explaining such a property according to the present knowledge of renal physiology. It is well expressed in the following translation from Volhard's treatise on nephritis [6]:—

"It is one of the many mysterious performances of the kidney epithelium that it does not hold back foreign kinds of protein, but excretes them with the urine."

This belief seems to have been based on the fact that an excess of ingested egg albumin may escape digestion and appear in the urine. The original observation is said by Claude Bernard [7] to have been made by Berzelius about 100 years ago. There are several papers in the literature of 50–70 years ago studying the excretion of egg albumin injected intravenously into animals, and discussing whether it escaped through the glomerular membranes or the tubular epithelium. More recently there have been many studies on the excretion of hæmoglobin, and a few showing that Bence-Jones protein was excreted when injected intravenously into dogs.

In spite of the above evidence that foreign proteins are excreted by the kidney, the matter seemed to be so important clinically, and so difficult of physiological explanation, that it was decided to investigate the matter further. Experiments have been performed both on anæsthetised cats and rabbits, and on isolated kidneys of dogs, which were perfused with defibrinated and oxygenated dogs' blood by means of a pump. In this way observations confined to one animal were avoided, and a watch could be kept for effects due to the nervous system or to organs other than the kidneys. The "pump-lung-kidney" preparations were made in duplicate, so that the two kidneys of one dog could be perfused simultaneously and independently, one kidney being used for experimental, the other for control purposes. It may be stated at once that the experiments on the whole animals and on the isolated kidneys gave identical results. Various proteins dissolved in 0·9 per cent. NaCl were added to the circulating blood, through a cannula in the jugular vein in the whole animals, and by simple addition to the blood reservoir in the isolated preparations. Proteins were chosen, the molecular weights of which were fairly certainly known. It was fortunate that Svedberg and his colleagues [8] had determined so many in the last five years, with particular reference to their stability at various hydrogen-ion concentrations and temperatures. His method is based on a study of the sedimentation of the protein when rapidly centrifuged. It also allows him to obtain an approximate figure for the radii of those molecules which are spherical, and a factor of dyssymmetry in other cases.

The results are summarised in the accompanying Table, which also gives Svedberg's figures for the molecular weights and molecular radii.

It will be seen at once that it is only the proteins with the smaller molecular weights and the smaller molecular radii which are excreted. Since it happens to have been only the smaller proteins which were studied by previous workers, a misconception has arisen. The barrier seems to correspond to a molecular weight of 68,000, and a molecular size of somewhere about 2·5 μμ. Hæmoglobin has been included in both classes, as it is only excreted when present in a concentration above a certain threshold, as has also been shown by previous workers. It is not apparent why hæmoglobin in high plasma concentration should be excreted, while serum albumin in equivalent concentration is not. There are possibly anomalies about the borderline, and as neither of these proteins has a symmetrical molecule it may be due to some difference in molecular shape. The serum proteins used were human, horse, ox, cat, and dog. The proteins were not separated from one another or purified, but the whole "foreign" serum was added. In no case was the "foreign" serum protein excreted.

Summary of Results

Protein.	Molecular weight.	Molecular radius.
Excreted.		
Gelatin	35,000	†
Egg albumin	34,500	2·17 μμ*
Bence-Jones	35,500	2·18 μμ
Hæmoglobin	68,000	(Not spherical).
Not Excreted.		
Hæmoglobin	68,000	(Not spherical).
Serum proteins—		
Albumin	67,500	„ „
Globulin	103,800	„ „
Casein	188,000	„ „
Edestin	208,000	3·94 μμ
Hæmocyanin (Helix)	5,000,000	12·00 μμ

* 1 μμ = 1 millionth of a millimetre.

Such proteins as were excreted were concentrated, the concentration ratio—urine/plasma—being about 5. There was no evidence that the elimination of moderate amounts of protein affected the renal function. Nevertheless, it is possible that very prolonged excretion of large amounts of protein might interfere with normal renal function, which might account for experiments by previous workers who detected serum proteins being excreted at the same time as egg albumin, and would also suggest that the renal insufficiency sometimes, but not always, associated with Bence-Jones proteinuria, may be a secondary effect.

We therefore conclude that proteins are excreted or are not excreted by the normal kidney according to their physical size, and not according to their chemical nature or biological origin. This is a finding which simplifies the approach to the study of the excretion of protein in disease. Svedberg has shown that some of the proteins with large molecular weights can be broken up into units of lower molecular weight, under various conditions of salt concentration and acidity, and he regards a unit of molecular weight of 35,000 as common to proteins. It is therefore not inconceivable that some such change might occur in disease, with subsequent excretion of the smaller molecule. We are proceeding to investigate the question as to whether any of the proteins found in human urine in disease are excreted by a normal kidney. Those purified by dialysis from the urine of patients with cardiac lesions and venous congestion do not pass through a normal kidney. Our observations on nephritic urinary proteins are not yet numerous enough to publish.

A full account of the work referred to in this paper, with experimental details, will be published elsewhere, together with a histological note by Dr. Dorothy S. Russell.

SUMMARY

Several theories of renal disease depend on the assumption that kidneys can excrete "foreign" or obnoxious proteins. Experiments on animals have shown that only proteins with molecular weights less than 68,000 are excreted. Proteins with larger molecular weights, including serum proteins of other species, are not excreted. Hæmoglobin, with a molecular weight of 68,000, is peculiar in that it is excreted when its concentration in the plasma exceeds a certain value. Whether or not a protein

is excreted by the kidney depends on its physical properties, and not on its chemical nature or biological origin.

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Clinical and Laboratory Notes

ARTIFICIAL PNEUMOTHORAX

SOME RESULTS OF OUT-PATIENT TREATMENT

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IN a report published in THE LANCET (1931, i., 1028) we dealt with the results of treatment of 26 cases of pulmonary tuberculosis at an out-patient artificial pneumothorax clinic at Victoria Park Hospital during 1930. These cases have been further observed and, with others, form a group of 55 treated during 1931.

In our previous report we drew special attention to the relatively minor importance of the mechanical aspect of the treatment, and we have again been impressed by the necessity for careful review of the patient as a whole, and consideration of symptoms and physical signs at each visit. Only by such constant supervision can the full benefit of the treatment be obtained.

An analysis of the cases and results of treatment is given below.

Total cases, 55: male, 22; female, 33.
Average age: males, 30·1 years; females, 24·5 years.
Age-groups.—Male: 10–20, 1; 21–30, 11; 31–40, 7; 41–50, 3. Female: 10–20, 8; 21–30, 22; 31–40, 1; 41–50, 2.
Extent of lung disease: unilateral, 41; right, 17; left, 24; bilateral, 14.
Side of pneumothorax: right, 25; left, 28; bilateral, 2.
Prognosis: good, 35; doubtful, 9; poor, 11.
Working or fit to work: 34.
Unfit to work: 21.
Weight: stationary, 35; gain, 10; loss, 10.
Sputum: test for tubercle bacilli positive, 10; sputum absent, or T.B. negative, 45.
Effusion: serous, 18; purulent, 2 ("sterile" T.B. present) (1 spontaneously absorbed).
Adhesions: operated on, 7; not operated on, 31.
Admitted to hospital or sanatorium: 9.
Average duration of pneumothorax to end of 1931: 22 months.
Duration in years: 1 year, 23; 2 years, 18; 3 years, 12; 4 years, 2.
Intervals of refills: 1 week, 2; 2 weeks, 15; 3 weeks, 10; 4 weeks, 10; 5 weeks, 5.

In a disease the course of which is so varied as is that of pulmonary tuberculosis, figures must necessarily be interpreted with caution, the more so if the series of cases is small. Nevertheless, the fact that of the 55 cases 34 remain free from symptoms of illness and are either in actual employment or fit to work appears to us, in the circumstances, a satisfactory result. Routine examination of sputum has given a positive result in ten cases only during the year, and in two of these the test has since become negative. The removal of a large proportion of patients from the positive to the negative group must be regarded as a definite advantage to the community. In 29 of the present series both cough and sputum are absent.

Pleural effusion of some degree was again common, complicating 20 cases, of which 18 were serous and 2 purulent, containing tubercle bacilli, but sterile on culture. Fluid was found to appear more frequently among those patients in whom adhesions prevented a complete collapse of the lung. Thus, of 38 such cases with adhesions, effusion occurred in 17 (45 per cent.), while of 15 cases free throughout from adhesions, in 1 only (6·3 per cent.) was fluid found. In the remaining 2 cases of the series an effusion had followed the division of adhesions previously present. These results lend support to the conclusion of S. R. Gloyne,[1] from experimental studies and post-mortem examinations, that the probable cause of effusion complicating pneumothorax is the stretching and rupture of an adhesion at a point at which tubercle bacilli can be liberated into the pleural cavity.

In the majority of cases the occurrence of effusion caused no serious interference with the treatment; often the degree of collapse was thereby improved, while the intervals between refills could be subsequently lengthened. As regards prognosis, there appeared little to choose between those cases with and those without effusion. Of 18 cases with serous effusion the results were good in 12 and doubtful or poor in 6, while of the 35 cases without effusion 23 did well and 12 had a doubtful or poor prognosis. Five cases at some stage of their course required air-replacement.

In 4 cases effusion was followed by an obliterative pleurisy, creeping slowly upwards from the diaphragm with re-expansion of the lung below a fluid level, the effusion being finally absorbed or reduced to a small encysted or loculated collection, surrounded by densely thickened pleura and fibrotic lung. In each instance, although refills had to be abandoned, the final condition of the patient was good.

Nine patients were admitted to hospital or to sanatoriums during the year; 3 for division of adhesions, 4 to sanatoriums as an accessory to treatment and to help favourable progress, and 2 because the condition was deteriorating.

Pneumothorax was discontinued in 17 cases. In 8 of these it was considered safe to allow re-expansion of the lung, as the disease appeared clinically arrested, the average duration of the collapse being two years ten months. The reason for discontinuing the pneumothorax was fluid in 4 cases; extension of disease to the other lung in 4; and in 1 case interference with the circulation resulting in cardiac distress and dropsy, which were relieved on ceasing the refills.

APPARATUS FOR THE MICRO-ESTIMATION OF BLOOD CHOLESTEROL

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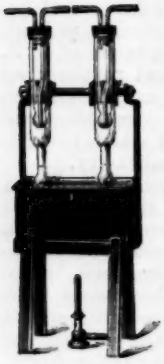
IN view of the importance of following the blood cholesterol in the treatment of diabetes some method of estimating it, using only small quantities of blood, has become desirable.

In 1924 Leiboff[1] described a method demanding the use of only 0·25 c.cm. blood, an amount easily

[1] Tubercle, 1926, vii., 424.

obtainable by finger puncture. In Leiboff's method the blood is taken up into a 0·25 c.cm. pipette and discharged on to a disc of filter paper, which is thereafter extracted with chloroform in a special form of still. The method has the advantages of being simple, quick, and of requiring only a small amount of blood; further, owing to the fact that the extraction and estimation are performed in the same tube, there is no loss of the cholesterol under estimation. It has, however, certain disadvantages dependent upon the fact that the special Leiboff extraction tube is connected to the special still by means of a cork; the distillation is performed over a water bath and in using the apparatus it has proved very difficult to prevent water due to steam condensation soaking through the cork and spoiling the chloroform extract.



The apparatus described below is a modification of the original Leiboff tube designed to eliminate this disadvantage; it has the further advantage of doing away with the necessity for the special still, a fairly expensive piece of apparatus.

The *apparatus* consists of a tube 6 in. long and 1 in. in diameter; it is constricted at the lower end and terminates in a bulb after the manner of the Folin tube. The bulb below the constriction is graduated accurately to a total content of 5 c.cm. The tube may be fitted with a side-tube to allow of the escape of the chloroform vapour, but this is not necessary. Suspended in the upper part of the tube is a simple condenser.

Method.—The blood specimen may be collected from a finger prick straight into the 0·25 c.cm. pipette or alternatively oxalated blood may be used; it is discharged on to a filter-paper disc ¼ in. in diameter cut from Whatman filter paper 1/16 in. thick; the discs should be ether-extracted in bulk before use. If the apparatus has not a side-tube two small crescents may be "nibbled" from the edge of the disc to allow free passage of the chloroform vapour. In order to get rid of water the disc with the absorbed blood is dried by gentle heating for half an hour at between 40° C. and 50° C. A little less than 5 c.cm. pure dry chloroform

TABLE I

Experiment No. ..	1	2	3	4
Amount of cholesterol—				
On disc	in mg. 0·1	0·2	0·5	1·0
In control	„ 0·1	0·2	0·5	1·0
Colorimeter reading—				
Of control	in mm. 15·0	15·0	15·0	10·0
Of extract (using Leiboff tube) ..	„ 14·9	14·9	15·1	10·0
Of extract (using modified tube) ..	„ 14·8	15·0	14·9	10·1

is poured into the extraction tube and the dried impregnated filter-paper disc is dropped into the tube where it remains supported just above the constriction. The condenser is placed in position and the tube immersed to the level of the chloroform in a bath of boiling water. Extraction has been found to be complete in 20 minutes, but half an hour is usually allowed. The tube is removed from the bath, wiped dry, and the condenser and disc are removed; when the tube has cooled to room temperature chloroform is added exactly to the 5 c.cm. mark. Estimation is performed in the usual way making use of the Liebermann-Burchard reaction; 5 c.cm. of a standard solution of cholesterol containing 0·4 mg. cholesterol per 5 c.cm. is placed in a similar tube; to both standard and test are added 2 c.cm. acetic anhydride and 0·1 c.cm. concentrated sulphuric acid. Cork stoppers are inserted, the tubes are then inverted twice to mix well, cooled for half a minute in cold water, and set aside in the dark for ten minutes for the colour to develop. Comparison is made with the colorimeter, the standard being set at 10 or 15 depending on the intensity of colour of the unknown. Calculation:—

$$\frac{\text{Reading of standard}}{\text{Reading of unknown}} \times 160 = \text{mg. per 100 c.cm. blood.}$$

The standard solution of cholesterol should be kept in the form of a concentrated 0·08 per cent. solution and diluted 1 in 10 for use.

Table I. indicates the accuracy of the method. Varying amounts of cholesterol were absorbed on to the discs and extracted, and the extracts were compared with controls containing the same amounts. Table II. shows comparative estimations by the methods of Bloor [2] and of Myers and Wardell.[3] It

TABLE II

Experiment No.	1	2	3
Cholesterol content of blood in mg. per cent. by method of—			
Bloor	168	160	235
Leiboff, using modified tube	164	152	210
Myers and Wardell	132	128	182

will be noted that the readings obtained by the Leiboff method are higher than those obtained by the method of Myers and Wardell. This fact was noted by Leiboff in his original description of the method and is probably due partly to loss in transferring the plaster-of-Paris from the mortar to the extraction thimble, and partly to unequal percolation of the plaster-of-Paris mass by the chloroform.

I am indebted to Dr. S. C. Dyke, director of the department, for his kind assistance. Further particulars with regard to the apparatus described are obtainable from the makers, the Scientific Glass-blowing Co., 95, Gray's Inn-road, London, W.C.1.

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THE URETERIC LAMP AND ITS USES

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THE great strides made in urological diagnosis in recent years have led to the recognition of many lesions of the ureter or upper urinary tract which call for ureteric surgery. Sometimes the identification of the ureter after abdominal section is by no means easy, especially when one is dealing with the pelvic portion of the tube. Some operators pass a ureteric catheter and rely on palpation, but the illumination of the ureter obtained with an intra-ureteric lamp is a great advantage. Such an instrument is useful, not only where the ureter is the avowed object of the surgical attack, but in many cases where extensive peri-ureteral dissection may be necessary, as in Wertheim's radical hysterectomy or Miles's abdomino-perineal resection of the rectum. The following case illustrates the use of a type of transilluminator whose advantages are not, I think, sufficiently appreciated.

The patient, aged 56, was referred on account of attacks of renal pain recurring every few months during the preceding nine years, associated occasionally with slight hæmaturia. These attacks began with pain in the right loin, which radiated backwards to the renal angle. They were seldom severe, and rest in bed led to their prompt disappearance. There were no other urinary symptoms. Clinical examination was negative. Radiography revealed a small shadow in the right iliac fossa, sufficiently close to the probable line of the ureter to raise the suspicion of urolithiasis, and immediately below the right sacro-iliac synchondrosis the

shadow of a small pin was seen. A large opaque ureteric catheter was readily passed to the renal pelvis without obstruction and clear urine, subsequently proved to be sterile, was withdrawn. Radiographically, the shadow in the iliac fossa was seen to be 1 cm. outside the line of the ureter. The pin overlay the catheter directly. Intravenous urography showed kidneys functionally intact, but slight pyelectasis was present on the right side with a prolonged emptying time. In all the films the pin overlay the pelvic ureter and, in all, the right ureter was indistinctly outlined in the iliac fossa, suggesting a spasm in correlation with the other findings.

The patient was sceptical as to the possibility of his having swallowed a pin unwittingly. More questioning revealed the fact that after meals there was usually some discomfort in the right iliac fossa. A provisional diagnosis of peri-ureteritis due to a foreign body in the vermiform appendix was made and laparotomy was advised.

After induction of anæsthesia (gas-oxygen-ether), the ureteric transilluminator (described below) was passed through a Buerger operating cystoscope. The abdomen was opened through a right paramedian incision and a long appendix, hanging quite freely into the pelvis, was exposed. It was removed and proved to contain a small steel pin in the distal extremity, the point of the pin directed against the tip of the viscus. The ureteric lamp was switched on and, with the intestines packed out of the way, the ureter was clearly defined and examined. The two calcified glands seen radiographically were felt lateral to the ureter but, in direct contact with the tube, were seen two or three small discrete glands. As there was no apparent peri-ureteric thickening, dissection was deemed unnecessary and the abdomen was closed. Eight months have elapsed since the operation and there has been no recurrence of the renal pain. All the dyspeptic symptoms have likewise disappeared. It appears probable that the appendicular glands in the ileo-cæcal angle were causing ureteric spasm with varying degrees of upper urinary tract obstruction.

The ureteric lamp or transilluminator used in this case was introduced more than ten years ago by Mr. Canny Ryall. It consists (see illustration) of a small lamp mounted on a long flexible insulated wire, similar in appearance to the commonly employed ureteric catheter. The lamp itself is covered save for two small windows through which the light is projected. A length of cord connects the lamp with an accumulator, and interposed on the circuit is a switch. The ureteric portion is made in various sizes from 7 F. to 15 F., all readily introduced through an operating cystoscope. The actual passage of the transilluminator takes but two or three minutes and entails no difficulty to those versed in the technique

of ureteric catheterisation. The larger sizes are useful for the illumination of vesical diverticula.

One warning is perhaps necessary. It is essential to be sure that the terminal portion containing the lamp is well screwed home, since a loosely fitting junction might well lead to the lamp being left behind on withdrawal of the catheter. I have not heard of such an accident, but it appears to be a possibility. The instrument is withdrawn when the ureter has been identified and, as a routine, the integrity of the equipment should be verified.

I am indebted to Mr. Canny Ryall for permission to reproduce the accompanying illustration, which first appeared in his "Operative Cystoscopy."

REVIEWS AND NOTICES OF BOOKS

Pseudo-Ulcus Ventriculi

By H. HANSEN. Copenhagen: Levin and Munksgaard. 1932. Pp. 430.

Dr. Hansen has written a book of over 400 pages based upon a careful analysis of 85 patients suffering from gastric ulcer or presenting symptoms similar to those of ulcer. At the same time he has reviewed fully the extensive literature upon this subject; the list of references occupies 30 closely printed pages. The clinical picture of gastric ulcer may be so variable that any long-standing indigestion is liable to be suspect; on the other hand many causes may produce similar symptoms. Dr. Hansen has paid particular attention to tuberculosis, and believes that a large proportion of so-called simple dyspepsias have their origin in tuberculosis. All workers will agree that benign tuberculosis of the lungs is able to cause disorders of gastric function and symptoms of gastric pain, but the frequency with which such dyspepsia offers diagnostic difficulties may vary considerably in different countries. In England the differential diagnosis of phthisis from gastric ulcer is not so common a problem as it would appear to be in Denmark.

To those specialising in digestive disorders Dr. Hansen has given useful help. He has collected valuable information from the scattered literature, and has supplied instructive full case-histories, although the numbers he is able to quote are too small to justify general conclusions. The inconstancy of symptoms on which he relies as a point against the probability of gastric ulcer is often found in proved cases of this disease. But his discussion of the symptoms which make unlikely the presence of an ulcer will supply a convenient summary of the knowledge which has been gained by clinicians of wide experience.

Abdominal Cavity and Peritoneum

A Clinical Study. By EDWARD M. LIVINGSTONE, B.Sc., M.D., Associate Visiting Surgeon, Bellevue Hospital. New York: Paul Hoeber. 1932. Pp. 866. $15.

THE phenomena of abdominal disease are the result of the relations of the viscera to the abdominal walls and more distant parts of the body, and are explainable largely on embryological and neurological grounds. The object of the author has been to help the clinician by placing the mechanism of symptoms upon a rational basis, and in pursuit of this aim he has divided his subject up into chapters in which are considered separately the cavity, the wall, the gastro-intestinal tract, visceral neurology, and so on. The book has a refreshing and stimulating quality; nearly every topic is presented from an unfamiliar aspect. The arrangement of matter, however, leads

to much overlapping, and yet a sense of incompleteness in individual sections. For example, on page 593 a section is headed, "Reflexes initiated from within the stomach and expressed elsewhere." This is literally true, since a few lines further down we are referred to page 213 for the points of tenderness and hyperalgesia associated with peptic ulcer; we are then asked to turn to page 69 to learn what Sale's reflex is; and on proceeding to page 69 and satisfying ourselves about diaphragmatic spasm, we are told that it can also be detected by Litten's sign, an account of which may, it is said, be found in the "section on eponyms." This may indeed be so; we ourselves did not pursue the investigation further. It is common throughout the book to find a reference to signs or symptoms of which the explanation is given elsewhere. Even this confused arrangement of the material does not detract much from the value of a book which contains such useful information. A particularly good chapter is that entitled The Clinical Interpretation of Viscerosensory Phenomena or Skin Signs, to which Dr. Livingstone has given much study. On the physiological side there are important omissions: the phenomena of secretion, the influence of endocrine glands on abdominal phenomena, the physio-pathology of intestinal obstruction. A curious feature is a collection of more than 1000 examination questions which occupy 100 pages. An attractive collection of facsimile reproductions of some of the epoch-making contributions to abdominal diagnosis is included.

Les maladies organiques du faisceau de His-Tawara

By IVAN MAHAIM, Privat-docent à la Faculté de Médecine de Lausanne. Paris: Masson et Cie. Pp. 586. Fr.80.

THIS book is the outcome of years of original research on the complicated pathological changes which can affect the bundle of His-Tawara, and is especially directed to furnish histological proof of lesions demonstrated by the electrocardiogram. An effort has been made to correlate the clinical with the pathological aspect of the subject, and to eliminate much that has up till now been hypothetical. The author has worked to distinguish not only the nature of the lesion but its localisation and extent. The first part of the book is devoted to the anatomy and physiology of the bundle and to the methods used for examination, both graphic and histological. In the anatomy section the vascular supply is treated in great detail, since it would appear that changes affecting this explain the majority of the disorders to which the bundle is subject. The graphic method is given in great detail so as to make it possible for everyone to follow clearly its practical applications.

The second part of the book studies the clinical and anatomical findings. In many cases a detailed clinical history is given, illustrated by electrocardiographic tracings, and in some cases X ray photographs or orthodiagrams; the subsequent post-mortem findings are related and illustrated with microphotographs of serial sections of the bundle. These observations appear to cover practically all the known types of disordered rhythm, and many hitherto unpublished observations are included.

The third section seeks to demonstrate synthetically the relation between the lesion and its causal factor in coronary lesions, inflammatory valve lesions, and congenital myocardial defects. An important chapter is devoted to coronary artery disease and cardiac infarction, and its relation to the bundle. It is shown how coronary lesions can provoke two diametrically opposite disorders of rhythm which may succeed each other—namely, hyperexcitation as the result of the irritation of ischæmia, and inhibition as the result of scarring. The syndrome of septal endocarditis is an interesting condition of obvious clinical importance. Finally, the author reviews congenital defects in relation to the bundle, and ends with a chapter on prognosis and therapy. A valuable bibliography is appended.

Statistical Methods for Research Workers

Fourth edition. By R. A. FISHER, Sc.D., F.R.S., Chief Statistician, Rothamsted Experimental Station. Edinburgh and London: Oliver and Boyd. 1932. Pp. 307. 15s.

Dr. Fisher's aim in this monograph was, without entering unduly into the mathematical theory of these statistical methods, to embody the latest results of that theory, presenting them in the form of practical procedures appropriate to those types of data with which research workers are actually concerned. The rapid demand for a fourth edition is sufficient evidence that the value of his book has been appreciated in spite of its difficulties; for it is not an easy book for the layman or even for the trained statistician. The changes in this edition are not very extensive. Amongst them are the addition of a note on the historical origin of the statistical theory underlying the methods presented, and the consideration in more detail of the analysis of covariance. Dr. Fisher is to be congratulated on having produced, in addition to his important contributions to statistical theory, a book which is obviously assisting research workers to interpret their data.

1. Outline of Comparative Embryology

By AUTE RICHARDS, Professor of Zoology in the University of Oklahoma. London: Chapman and Hall, Ltd. Pp. 444. 30s.

2. Text-book of Human Embryology

By CLEVELAND S. SIMKINS, Ph.D., Associate Professor of Anatomy in the Medical School, University of Tennessee. Philadelphia: F. A. Davis Company. Pp. 469. $4.50.

1. AN excellent book, written by one who has thoroughly mastered his subject. The book is intended for students and other workers in biology and general comparative embryology, but no medical student interested in the biological side of his work could fail to learn and benefit from a study of this orderly and comprehensive volume. The book is, of course, not confined to chordate embryology; the first part deals with the actual early developmental phases in numerous types illustrating general features, and the second part deals with questions associated with embryology, such as germ-cells, the germ-layer theory, recapitulation, asexual and parthenogenetic reproduction, pædogenesis and neoteny, polyembryony, the determination problem, and ecological control of invertebrate larval types. The illustrations are excellent and appropriate, and the glossary and bibliography adequate.

2. This book, among features not commonly found in works of this sort, gives us many new figures. These include some which are not easily available to the ordinary student. The sections dealing with purely histological matters are good, even though they present the reader with a multiplicity of long

names; but we confess to some disappointment in the other parts of the book. The author seems to have views concerning implantation and villous formation which are not exactly in accord with those held in this country. Among the figures we detected some irregularities: for example, a diagram of the sternum shows this possessing a central unpaired bar in addition to the usually accepted lateral structures, but no mention of such a thing is to be found in the text. Again, the account of division of the ventricular region of the heart does not seem to us to be intelligible. In this connexion we hope soon to have seen the last of those absurd figures of these parts, which are taken from Kollmann—but hardly from the normal embryo. Prof. Simkins has done much work on the histological differentiation of the genital glands, and gives a good account of the developmental processes within the genital system.

A General History of Nursing

By L. R. SEYMER, M.A. Oxf., S.R.N. London: Faber and Faber. 1932. Pp. 307. 12*s.* 6*d.*

Mrs. Seymer's book, which she describes modestly as a historical sketch, is closely packed with information. In a succinct manner, and with a wealth of references in testimony of anxious research, the classic origins of the nurse's calling are sketched, and the early Christian, monastic, and mediaeval developments set out. In all this the author is going over old ground, but the interesting story is well composed, and the sources of information are recorded, so that anyone interested in a particular phase can supplement what is given. When the history reaches the nineteenth century we have a record of the early nursing sisterhoods of particular value, for the archives here are not easy of access, and there is no widespread familiarity either with the cause and spirit of their origins, or with the part that they played 100 years ago, and are still playing, in the progress of the nursing profession. Florence Nightingale's work receives again the tributes which can never be too often repeated, and the fact that with the opening of the Nightingale school the era of nursing, as we now understand it, definitely began, is brought out.

We now arrive at modern history, and this is told with consistent adherence to the method adopted in the earlier part of the book—that is to say, that the author is fully descriptive but never critical. The plan of education, the development of training schools, the arrival of State recognition, and the institution of internal organisation are fully dealt with, and the multiplicity of work, now grouped under the common heading of "public health service," is carefully analysed, the information being made both interesting and valuable by its international character. But how the working of the educational scheme and of the training schools has succeeded is not mentioned. Nor is there any suggestion that either may be capable of improvement or expansion. The resolve to be descriptive and not critical is maintained throughout.

The least satisfactory sections are those dealing with insurance and pension schemes and with working hours. The former indicates (p. 237) the superannuation conditions which obtained in this country before April, 1930, when the poor-law hospitals were transferred to local authorities, rather than those now in force. As to hours of work, it is hardly true, as is here stated, that "in most hospitals in England . . . the 56 hour week already prevails" (p. 239). The average weekly hours (excluding all meal-times) in the representative group of hospitals answering the questionnaire of THE LANCET Commission on Nursing (see p. 247 of their Final Report) were: 50 to 54 hours, 15 per cent.; 55 to 59 hours, 50 per cent.; 60 to 64 hours, 28 per cent.; 65 to 69 hours, 7 per cent.

This is an interesting book and the outcome of real research, much of which has been made possible by the use of the library at Geneva belonging to the International Council of Nurses.

Schizophrenia

By HELGE LUNDHOLM, Ph.D., Associate Professor of Psychology, Duke University. Durham, N.C.: Duke University Press. 1932. Pp. 117. 5*s.* 6*d.*

THE general method of this work is that which has been until lately characteristic of much American psychiatry. Prof. Lundholm attempts to interpret the morbid development of the schizophrenic patient as being the "life-situations" of a specially responsive personality; he considers it mainly in the light of McDougall's general doctrine of psychology. The virtue of the method lies in its emphasis on the interplay of disposition and environment, its weakness in the superficial broadness of survey and reliance on explanation in terms of comprehensible behaviour. It offers rather facile speculations about accepted data and these speculations do not suggest further lines of inquiry. The discussion of delusions and of "scattered" thinking in this study is surprisingly out of touch with the intricacies of modern psychopathology. The author has clearly spent much time in the observation of patients and has succeeded in fitting most of their behaviour into a complete framework of theory. Such interpretative studies are admittedly more satisfying to many psychiatrists than is a recognition of the great gaps in present knowledge; a patient willingness to collect further observations or to test dubious but stimulating hypotheses is more rare. Dr. Lundholm offers nothing astonishing and nothing profound but much that is interesting. His style is not lucid; such phrases as "the contex of a complex" and "this son of man" irritate and mystify the reader.

Anatomie des lymphatiques de l'homme

By H. ROUVIÈRE, Professor of Anatomy in the Faculty of Medicine of Paris. Paris: Masson et Cie. 1932. Pp. 489. Fr.150.

THIS book represents the information of to-day concerning the lymphatic systems of man, set forth by a well-known authority. Prof. Rouvière has devoted years to this study, and to the collection of results obtained by other workers; the present work, therefore, has value for the clinician as well as for the anatomist. The subject does not lend itself to a description which communicates the author's enthusiasm to the reader, for it would be idle to pretend that continuous accounts of groups and subgroups of nodes with their attendant collector and drainage systems, do not in their repetitions become somewhat wearisome. Here at least one is fortified by the knowledge that one is receiving of the best. The brief descriptions in English textbooks are in general agreement with the detailed statements made in this monograph, which also deals with variations not found in text-books. The recent work of Kiss and Botar on the relations between the lymphatic channels and the vegetative nerve-plexuses

here noted is not well known in England. Of interest too is the division of the costal pleura into areas; this division was proposed some few years ago by Prof. Rouvière himself, and the separate drainage of the upper part was pointed out at that time. This part of the pleural sac is, embryologically, a secondary extension, and we may hope that the lymphatic system will be described some day from the standpoint of developmental morphology, to which it would seem in many ways to be adaptable. Prof. Rouvière's work should remain a standard for years to come, and provides a first-class book of reference with a complete bibliography.

RESEARCH ON MENTAL DISEASE

A SUPPLEMENT[1] to the eighteenth annual report of the Board of Control contains the record of scientific research at 60 different institutions under the auspices of the Board. The financial crisis most unfortunately caused postponement of a scheme of coördinated research which the Board hoped to be able to carry out under the sanction provided by Section 6 of the Mental Treatment Act. There is no branch of medicine, says the report, in which research is more needed, and to advance beyond the stage of early treatment to definite prophylaxis is impossible in the present state of knowledge. Even from the purely economic standpoint, a small reduction in the incidence of mental disorder would soon more than compensate for the cost of extended research. Meanwhile, however, much good scientific work continues to be done in individual hospitals; local successes are won here and there, but the Board sadly regrets the absence of any general advance. Nevertheless, it recognises a real progress in general efficiency; the process of hospitalisation continues steadily, and recent appointments to the post of superintendent have almost without exception gone to men of scientific outlook.

Communications regarding research have been received from 49 of the 98 county and borough mental hospitals, from 4 of the 13 registered hospitals, and from 7 institutions for mental defectives. This is an increase of 18 on the previous year. Summaries of routine laboratory work have been sent from 41 institutions, more than twice as many as last year. The Board looks forward to being able to collate these returns. Several of the mental hospital laboratories are recognised as county laboratories or undertake work for the public health authorities.

LABORATORIES

The modern treatment of mental disease, in particular the use of induced pyrexia, has added considerably to the pathological work which is necessary in an adequately equipped mental hospital. Most mental hospitals now have a laboratory of their own, and either a pathologist or one member of the staff specially interested in pathology. At Coney Hill (Gloucester) a pathological laboratory has been equipped for routine investigations and for some research, and here, as in several mental hospitals, the laboratory is proving useful to the city and county; the pathologist carries out tests for the medical officer of health and the Gloucester Royal Infirmary. Wassermann tests are being done on all the patients in the hospital, and in future the test will be made on admission. This measure, adopted in a number of hospitals, is giving interesting results.

Increasing attention is being given to chronic infective processes as a possible cause of mental disorder.

From Birmingham comes a study of "Nasopharyngeal Sepsis in 1001 cases of Mental Disorder," and several other papers on the same subject. The Board admits, however, that at this stage of the investigations there must almost inevitably be doubt as to the extent and frequency with which these conditions exert their influence, but hopes that every encouragement will be given to this line of study and treatment. There are also a considerable number of biochemical communications, including several studies in blood-sugar. Cardiff is investigating how far patients with a hyperglycæmic index vary in response to the administration of various internal secretions. An inquiry there into nitrogen metabolism suggests a cleavage between depressed patients on the one hand and cases of dementia præcox and stupor on the other. Much painstaking work on dysentery and allied infections has been carried out, and the report from Wakefield is a noteworthy lesson on the value of prophylactic inoculation. Caterham shows how much dislocation of administration and interference with patients' amusement can be avoided by the employment of prophylactic methods, such as Dick-testing and inoculation.

The Birmingham Research Board has concerned itself with the new stain for vessels in thick brain sections. A regular examination for localisation and type of vascular abnormality has been commenced, but unfortunately the financial position is causing delay. Among the conditions recognised are: microscopic areas of ischæmia, occlusion of vessels, scars of non-patent vessels, capillary leakages of serum, scars of old meningitis, patchy and diffuse loss of cells, and periventricular atrophy.

SPECIAL TREATMENT

Some 25 communications on general paralysis have been forwarded; malaria is being used at 72 institutions and various forms of sulphur in 20 more.

At Leicester of 88 cases treated since 1924 with malaria 27·3 per cent. have been discharged, and another 4·5 per cent have improved. Of the 43 deaths only 8 were associated with the treatment. Two of the discharged patients had been in the hospital on a voluntary basis. During last year eight men and one woman were infected by blood inoculation, and intensive courses of sulfarsenol, novarsenobillon, and bismuth were given after the malaria. Three of these patients were discharged as recovered and one was relieved. The blood from 150 new cases was tested by the Vernes method, and this test was compared with the Wassermann test. There was only one discrepancy: a known syphilitic in which Wassermann reaction was positive and the Vernes negative.

At Winwick only 12 of the 21 general paralytics admitted were in a sufficiently early stage for malarial therapy—a regrettable fact, doubly so because it seems to have been partly due to shortage of beds. An interesting report on the serological results and another on the Meinicke reaction are published from the same hospital. Induced pyrexia is being tried for several varieties of mental disorder; some hold that the fever has a specific effect, but the majority ascribe the results to psychological changes. In any case there is no doubt of the importance of using the interruption in phantasy life to push occupational therapy. A number of studies of dementia præcox have been made; at Long Grove the effect of stimulation by carbon dioxide has been tried, and at Rainhill diathermy has been used. The histology of the digestive tract in these patients has been studied at Ewell and Colney Hatch and the endocrine function at Storthes Hall. Rainhill has concluded that there is no characteristic histopathology of the brain, and that the most constant feature is fibrosis of the solid viscera, with the kidney and spleen primarily involved.

Several hospitals have studied the ductless glands, but the Board feel that, on the whole, better value for time and labour could be obtained by studies based less exclusively on these organs. A number of clinical accounts of cases and of descriptions of special methods of treatment have also been received, and the Board wishes it had more reports on experimental psychology. Horton has presented a report on the application of psychology in the realm of psychiatry. Cardiff has studied the relationship between emotional tension, as shown by the psycho-galvanic index, and the hyperglycæmic index, and has shown a parallelism in psychotics, the variations in the hyperglycæmic index depending not on the type of psychosis but on the degree of emotional tension present. Prognosis, in the opinion of the Board, is worthy of more attention than it receives.

[1] Lunacy and Mental Deficiency. The 18th Annual Report of the Board of Control for the year 1931. Part II. H.M. Stationery Office. 1932. Pp. 223. 3s. 6d.

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THE LANCET

LONDON: SATURDAY, OCTOBER 8, 1932

A SIMPLIFIED TANNIC-ACID TECHNIQUE

THE teaching that tannic-acid treatment for burns necessarily involves such elaborate armamentarium as a general anæsthetic, a spray, and a cradle, has led to a general impression that its use is likely to remain impracticable except in hospital; but its manifest advantages in preventing absorption of toxic products are sufficiently widely recognised to throw discredit on the traditional greasy applications which, while alleviating pain, do not prevent sepsis, promote healing, or diminish secondary shock. This unsatisfactory position is reflected in the lack of precision which now characterises many pronouncements on the first-aid and home treatment of burns. Such teaching must be crisp and dogmatic if it is to be remembered in an emergency, when any uncertainty may cause unnecessary suffering. The supply of a long list of alternative applications to carron oil may reflect creditable doubt whether the first-aider should any longer be encouraged to offer immediate relief irrespective of ultimate results, but is not conducive to the prompt action which is the essence of first-aid treatment. The advisory medical committee of the Industrial Welfare Society evidently recognise this, for they definitely advise householders to replace the bottle of carron oil by (*a*) a supply of dry picric-acid dressings for applying to small burns; (*b*) a bottle of picric-acid lotion for application when the skin is broken; (*c*) a solution of bicarbonate of soda (prepared by the chemist with distilled water) for cleansing a dirty wound before applying the picric dressing. A dessertspoonful of baking soda in a pint of warm water is offered as an alternative to (*c*).

In the forthcoming edition of the First Aid Manual of the British Red Cross Society a dressing with lint or linen soaked in 1 per cent. picric-acid solution is also given first place, but the discussion of other possible applications to "a slight burn of naked forearm and wrist when shock is negligible" is rather nebulous. Tannic acid is dismissed as too elaborate and difficult as a first-aid measure except in permanent first-aid posts. Simple dressing "as used for any wound" carries the rider that its removal is often painful. Carron oil is said to relieve pain but "does not keep the area free from germs." Other oily preparations are mentioned with the warning that the application of oil and grease is not desirable if other substances are at hand, "as the subsequent treatment is rendered more difficult and less satisfactory though they do relieve pain." Finally it is suggested that powders such as boric acid, flour, starch, or arrowroot, made into a paste with water, can be applied to the dressing. Should the burn be very painful or should it be necessary to search for materials for dressing, the reader is advised to put the injured part into a basin of warm water with a heaped dessertspoonful of sodium bicarbonate. Another hypothetical case of which the first-aid treatment is fully discussed is a severe burn of both thighs and knees. If the materials are at hand strips of dressing soaked in "one of the solutions previously recommended" are to be applied, but if no other dressing is available the instruction is to cut off part of the patient's shirt, wring it out in water, and put it over the burnt part to exclude the air. The object of the emphasis laid on "excluding the air" in instructions to the public in connexion with burns is presumably the diminution of pain. In this instance the advice seems unhappy, as the patient's shirt might well be contaminated with organisms from sweat or even fæces, and no more unsuitable dressing than a piece of such material soaked in water could well be imagined.

A technique of treating small burns with tannic acid that does not involve the heroic measures outlined by the originators of this method has been sought in many places. Dr. D. M. GLOVER,[1] who reports a series of over 300 cases, has used compresses of freshly made tannic-acid solution as a first-aid dressing, and has found it advantageous to dispense with the thorough scrubbing of the wound under a general anæsthetic. Mr. J. H. HUNT and Mr. P. G. SCOTT have gone a step further towards working out a technique suitable for routine domestic use. Their advice, described on another page, of reinforcing with collodion the crust which develops after the application of tannic acid, gives protection not only against mechanical damage but against infection at the edge; and the success which they have achieved, after gentle cleaning of the surrounding skin, with no more elaborate equipment than a camel-hair brush, a teaspoonful of tannic-acid powder in an ounce of water, and a moist gauze pad, should encourage the extensive trial of tannic acid in the home. Of the three methods they have used in the out-patient department of St. Bartholomew's Hospital, one, tannic acid in ether reinforced with gauze, is suitable for extensive and dirty burns, when oil or grease has been used as a first-aid dressing, or when more than 24 hours has elapsed since the accident. The second method, tannic acid in ether reinforced with gauze and collodion, results in an extra strong crust, and is advised in clean cases when an anæsthetic is needed on other grounds—e.g., in nervous patients and young children. Tannic acid in a watery solution reinforced with collodion on the third day will, it is believed by the authors, have a wide application; no anæsthetic is needed, little pain is felt, and the collodion seems to make the affected area less liable to become moist and soft under a dressing. This method is not put forward as definitive; it seems probable that modifications might be devised to avoid the necessity of removing gauze adherent to the crust. But it should serve to stimulate other

[1] Surg., Gyn., and Obst., 1932, liv., 798.

attempts to adapt tannic acid treatment to first-aid conditions, and to relieve the patient's friends from the anxiety occasioned by the disrepute into which classical methods have fallen.

THE DIAGNOSIS OF EXTRA-UTERINE PREGNANCY

IN 1851 CHARLES D. MEIGS, of Philadelphia, wrote regarding ruptured tubal pregnancy, "Who is he astute enough to discriminate betwixt all the possible causes of such phenomena with so much clearness as to warrant him in the performance of a gastrotomy for Fallopian pregnancy?" The early recognition of ectopic pregnancy, even after rupture, remains to-day one of the most difficult diagnostic problems with which the gynæcologist is confronted. In a recent paper[1] OTTO VON FRANQUÉ, of Bonn, reminds us that though there may be significant warning signs there is often no missed menstrual period, since (according to his estimate) the ovum may be embedding for anything from 7 to 18 days before the next period falls due. When bleeding occurs it is, of course, liable to be mistaken for a period, though it is often too early, but it does not cease within the time limits of a period; while in a very early intra-uterine abortion the bleeding often does cease after a few days. During all this time the enlargement of the tube is so slight as not to be palpable even by an expert examiner. The Aschheim-Zondek test may thus be useful here, for in cases of pregnancy it is usually positive a few days after the first missed period, and at any rate it is positive at a time when by no other means could the fact of pregnancy be certainly established. Unfortunately the reaction becomes negative 8–12 days after death or expulsion of the ovum, or even after three days if there has been gradual interference with the placental circulation. The reaction is therefore of value only if it is positive. If death of the ovum has occurred the gynæcologist may elect to wait rather than to operate immediately; the gradual disappearance of the positive reaction may be observed, and operation may never be necessary unless absorption is unduly slow or bleeding protracted.

FRANQUÉ believes that diagnosis of unruptured and undisturbed tubal pregnancy is possible only in isolated cases. The differential diagnosis between a tubal pregnancy and an ovum growing only in one half of a normal uterus may be confusing, but the latter condition is happily rare. A retroflexed uterus may be taken for a hæmatocele in Douglas's pouch. The indefinite boundary of a hæmatocele, its immobility, its tenderness, and the relation of the uterosacral ligaments as felt per rectum should enable the distinction to be made, especially if the examination be carried out under anæsthesia. HÖHNE, he says, has reported a case in which a still intact tubal pregnancy was diagnosed by a decidual cast of the uterus. This is usually passed only after death of the fœtus, but it may be the first cause of bleeding, and he emphasises the importance of examining carefully everything discharged from the uterus when tubal pregnancy is suspected. He states that there is always pain on the side of the pregnant tube; if the pain is right-sided appendicitis may be its cause, but since in either case laparotomy is indicated this is of little moment; a median incision should be made to allow complete exploration of the pelvis. In appendicitis the pain and swelling tend to be higher up; the leucocyte count tends to be increased; and the red blood corpuscle sedimentation rate accelerated. In uninfected ectopic both are likely to be normal. The early signs of pregnancy and the vaginal bleeding too are helpful, though it is important to note that the latter may be very slight and visible only on vaginal examination, or even through a speculum. Occasionally appendicitis and tubal pregnancy may coexist, and there may be a causal relationship between them. In diagnosis between appendicitis and inflammatory tubes on the one hand and extra-uterine pregnancy on the other, pulse and temperature are of little use, as both may be little raised or even quite normal; but a high temperature excludes a simple non-infected ectopic, whereas complete pulse loss can occur without any internal bleeding in perforating peritonitis.

When a catastrophic rupture of a pregnant tube has occurred the signs are usually characteristic: peritoneal shock, abdominal pain and meteorism, small and rapid pulse, air-hunger, faintness, and pallor. Shoulder pain may be present, but may also occur in appendicitis and cholelithiasis. There is usually dullness in the flanks, but fluctuation is absent on account of the coagulation of the effused blood. If a woman in previously good health is suddenly seized with severe abdominal pain accompanied by meteorism, loss of pulse, pallor, coldness of the extremities, giddiness, and faintness the surgeon's first thought should be ruptured ectopic; no time should be lost in attempts at differential diagnosis but immediate laparotomy carried out. Although ruptured ectopic is the most likely finding the lesion may be a perforating peritonitis of any kind, torsion of an ovarian tumour or of a myoma, or one of the rarer causes of intraperitoneal hæmorrhage. A case has been recorded in which the doctor mistook the ruptured ectopic for acute poisoning and applied the stomach pump. As to treatment, FRANQUÉ holds that if the patient is not acutely ill expectant measures may be adopted at least for a time—bed, ice-bag to the abdomen, and possibly ichthyol and glycerin tampons to the vaginal vault. Should the swelling increase or the patient's condition deteriorate, operation must be immediately undertaken. He condemns the use of protein shock therapy to hasten absorption and also exploratory puncture, whether through the vaginal vault or abdominal wall. This measure should never be adopted by the practitioner, and only exceptionally in hospital, and never without all preparations made for immediate operation.

[1] Medizin. Klinik, 1932, xxviii., 989.

In this connexion it is interesting to note that KURT KAISER,[2] while not condemning exploratory puncture so wholeheartedly as FRANQUÉ, also emphasises that it must be done with all aseptic care, and only as a preliminary to immediate operation. If blood is aspirated laparotomy must be performed, though the aspiration of blood is no certain indication of a ruptured ectopic. In one of his cases the blood was obtained from a tube into which hæmorrhage had occurred because of a twisted pedicle.

THE MOUTH-BREATHER

NASAL obstruction is generally regarded as an important factor in the production of deformities of the palate, dental arches, jaws, and face. But there are some who dispute this view, and their arguments were ably presented by Mr. WARWICK JAMES and Mr. SOMERVILLE HASTINGS, in opening a discussion at the Royal Society of Medicine.[3] They emphasise the well-known tenacity with which young children cling to breathing through the nose in spite of difficulties; as it is easier to draw a deep breath through the open mouth than through the nose, the urge to nasal respiration is probably physiological, and they hazard the suggestion that variations of species, acquiring the easier habit of mouth-breathing, may have been wiped out by intercurrent disease, having lost the valuable function of the nose in protecting the individual from throat and lung affections. As an instance of the powerful urge to nasal breathing, they quote the case reported by C. W. RICHARDSON of an infant born with bilateral occlusion of the posterior nares, who was only kept alive by relays of assistants holding the lips apart until, by the end of the second week, the baby had learnt to breathe through the mouth; RICHARDSON, indeed, suggests that some infants, who never breathe and are stillborn, are instances of this deformity. Patients who have complete nasal obstruction from this cause have, in the majority of cases, high-arched palates, but they seldom suffer from deformities of the face or nose, nor, it may be added, from chest deformity or catarrhal diseases of the ears; they take perforce entirely to mouth-breathing, and escape the changes which result from respiration through a partially obstructed passage, or from infection, or from both these causes. On the other hand, marked changes in the nose and face are not infrequently associated with partial nasal obstruction. The theory that these are due to disuse of the nose during growth is negatived by their absence in complete congenital obstruction. A second theory suggests that, during normal respiration, there is a rhythmic increase and decrease of air-pressure in the nose, which acts as a stimulus and is absent in nasal obstruction; but this also is absent in complete congenital occlusion.

Mr. JAMES and Mr. HASTINGS hold that deformities of the nose and face are the cause of nasal obstruction rather than caused by it; but their failure to provide a satisfactory explanation was not regarded by Mr. E. B. DOWSETT, who presided over the section, as adequate reason to invert the usual arrangement of cause and effect; the relationship of obstruction to these deformities still remains obscure. Mr. JAMES and Mr. HASTINGS believe that the deformities are caused, not primarily by nasal obstruction, but by failure to close the mouth, either anteriorly or posteriorly, at what they term the two sphincters of the cavity. This they consider due most commonly to failure of muscular control; as corroboration, they found a history of severe illness or operation in infancy in half of the 52 cases examined. Of other causes, conditions demanding a rapid respiratory exchange, such as pneumonia, may initiate a habit of keeping the mouth open, as also may imitation of other members of the family, or a faulty position of the head. It must be admitted, however, that these considerations are not very convincing. Their description of the manner in which the palate and jaws are moulded by forces acting on them when the mouth is closed follows more usual lines and, in their opinion, the most important factor is the negative pressure produced within the closed mouth and maintained by the action of the tongue. Contrary to general opinion, they hold that nasal obstruction is rarely caused by adenoids, and support this view by the statement that most of the children who are diagnosed to have adenoids and benefited by operation have a mass of lymphoid tissue in the nasopharynx of such a size that it would not cause obstruction. They seem to have overlooked the probability that a small non-obstructive mass, when infected, may produce swelling of the adjacent nasal mucous membrane, and thus become an effective cause of obstruction.

SUNSHINE IN HOSPITALS

THE Royal Institute of British Architects recently appointed a Joint Committee on the Orientation of Buildings, and its report has now been published in the *Journal* of the Institute. The committee, the chairman of which was Mr. P. J. WALDRAM, F.S.I., in addition to architects, included representatives of the Board of Education, the Ministry of Health, the Building Research Station, and Sir LEONARD HILL, formerly director of the department of applied physiology at the National Institute for Medical Research. In the section of the report dealing with hospitals regret is expressed that the medical profession "has failed to bring sufficient pressure upon hospital authorities and hospital architects to secure the provision of solaria in which sunshine on the beds of patients can be used as a curative rather than as a restorative agency." Hospital planning, it is added, "has, with few exceptions, become standardised, not to say crystallized, or even fossilised, into the familiar ward with its long axis running north and south with windows on each side facing east and west between beds placed at right angles to the external

[2] Ibid., 1932, xxviii., 1057.

[3] Section of Odontology, to which members of the Section of Laryngology were specially invited. See THE LANCET, 1932, i., 936. The opening paper appears at length in the Jour. Laryng. Otol., September, 1932, p. 614.

window walls. Hospital wards are still planned with over 60 per cent. of the external wall space taken up by solid brick-work and the windows so spaced that the patients receive the minimum of sunshine."

With this arrangement the committee contrast one that has been adopted in Copenhagen whereby hospital beds are placed parallel to the wall in groups of four. This has, they say, a further psychological value in that, instead of lying in a long ward and seeing all day and every day a large number of comparative strangers in a state of ill-health, the patient is in a small group of four or six with whom he can feel at home so far as his illness may allow. The report omits to mention how, largely on the initiative of Mr. L. G. PEARSON, F.R.I.B.A., this lengthways arrangement of beds has been creeping into new hospital designs in this country, where a further development has been the erection of wards with a few piers along the walls and long sliding windows which fold together. In suitable weather the whole sides of the wards can be opened up, allowing for the free and full ingress of sunshine and air. The actual amount of solid wall mass is thus only 8 per cent. of the wall surface, instead of 63 per cent. as in the older type of wards. After careful investigation the additional cost of maintaining the necessary minimum temperature in view of the larger window space is found to be immaterial, and supervision is not interfered with. A material advantage of this type of "veranda" ward is the elimination of balconies in many-storied hospitals, which both shade and obstruct the windows of lower floors. It is, however, pointed out that the maximum admission of sunshine must be considered in due relation to other considerations material to the efficiency of a hospital as a whole, remembering always that in certain mental cases and in hospitals for the treatment of advanced cases of pulmonary tuberculosis exposure to direct sunshine may be undesirable.

The committee insist that it is essential in the design of hospital wards that architects should confer freely with the medical staff and ascertain the number of beds or wards which should be designed for cases where full insolation is undesirable. Clear and simple methods of predetermining generally and of testing in detail the insolation of wards and other units should be invaluable to architects engaged in hospital planning. The committee conclude that the proper orientation of hospitals may be considered as governed by the following general factors: (1) the type of disease which it is desired to treat; (2) the best type of ward to meet (1); (3) the best spacing between ward and other buildings; (4) the desirability of choosing sites and lay-outs which will secure proper orientation for all the various units.

ANNOTATIONS

THE PLIGHT OF TYPOGRAPHY

THE announcement made last week by *The Times*, that it was about to embody the results of two years' research and reorganisation in a new type especially designed for its own use, serves to emphasise the difficulties which beset, and which have hitherto almost prevented, all scientific progress in the underlying problems of typography. To the manifold scientific difficulties inherent in typography have been added others, not only practical and economic, but arising from the prejudices of numerous printing "experts" who have been accustomed only to the historical, artistic, and literary approach. The difficulties were examined, and the complexities of the problem of legibility were comprehensively set out, for the first time in the report on "The Legibility of Print," published by the Medical Research Council in 1926.[1] The author, Mr. R. L. Pyke, concluded that only the grossest typographical differences affected legibility, strictly so-called; and that habit, æsthetic, and associative considerations accounted for the greater part of a reader's reaction to a type-face. These conclusions appear to support, not the traditional, "artistic" printer, with his purely personal reactions, on which he too often and quite illogically dogmatises, but the need for further experiment and scientific study. The new type of *The Times* is not, it must be admitted, especially pleasing at first glance; but this proves nothing. Every psychological experimenter knows how quickly laboratory habits can be formed by subjects and how unreliable as a permanent index are introspective reports upon first reactions to a new stimulus. In so far as any evidence worthy of the name can be invoked, it goes to show that type such as that introduced by *The Times* is desirable. We say desirable of set purpose, for it may prove that the concept of "legibility" will have to be discarded, and that it will become impossible to say more of a type or publication than that it possesses in definite measurable degree this or that characteristic. For instance, the degree of contrast between "thicks" and "thins," the length of line, and the texture (not colour) of the paper, are problems which seem likely to yield fairly reliable answers to scientific experiment long before the compound problem of legibility itself. For, unlike legibility, each of these factors can be conclusively defined, and can be shown, if varied, to increase or decrease some relevant reaction in the reader; thus contrast affects speed in reading and also the tendency to confuse similar letters; length of line may be responsible for hesitancy in reading due to focus alterations and fatigue in eye movements; while glossiness of paper influences rapidity and fatigue in fixation and accommodation. Glossy paper, whatever its virtues, makes print invisible at points; it increases glare, and by acting like a mirror it disturbs the accommodation of the eye.

Legibility, as understood by the ordinary reader—indeed the very appearance of a type-face—can be as much affected by accidental factors that do not even arise in the theoretical or æsthetic problems of design, as by intentional variations in the character or size of the type-face itself. It is easy to convince an ordinary person that he is reading different types when two pages are set in the same type, but one is over-inked, the other under-inked, one is on soft fluffy paper, the other on hard glossy paper. Indeed, there may actually be a greater difference in such a case than where the two types chosen are actually different.

[1] The Legibility of Print. By Richard L. Pyke, M.A. Med. Research Council, Spec. Rep. Series No. 110. London, 1926.

It is not surprising if the influence of legibility cannot be isolated or measured. Refinements in design and a classical pedigree contribute less to typographical progress than an experimental attitude, freedom from affectation, and a high standard of production among those actually engaged in the printing industry.

VENOCLYSIS FOR ALIMENTARY TOXICOSIS

DIARRHŒA and vomiting in the infant, whatever may be their original cause, produce a clinical picture which has been well described as "alimentary toxicosis"; it is accompanied by dehydration, impaired circulation, and in many cases by a true acidosis. The method of treatment recommended by Karelitz and Schick at the last session of the American Medical Association[1] is based on the assumptions: (1) That the diarrhœa and vomiting, when once established, are symptoms of a non-specific hypersensitivity of the gastro-intestinal tract; even water given by mouth may act as an irritant and increase the diarrhœa and vomiting. (2) That dehydration is a secondary symptom and the diseased cell is unable to retain either water or salts; the suppression of urine which tends to follow the excessive loss of fluid by the bowel results in turn in an accumulation of katabolic products in the blood. (3) That the toxic symptoms of the disease are therefore at least aggravated by dehydration; the rationale of prolonged administration of fluid by the intravenous route is thus to rest the gastro-intestinal tract and to combat dehydration as effectively as possible. To infants exhibiting the picture of toxicosis these authors accordingly give as a routine a 5 per cent. solution of dextrose in normal saline intravenously, 100–200 c.cm. rapidly in 15 to 20 minutes, the flow being then reduced to 15–40 c.cm. per hour (5–10 drops a minute). The total daily amount of fluid given was about 60 c.cm. per lb. of body-weight, and in addition 75–150 c.cm. citrated blood was transfused as soon as possible after the venoclysis was started, 1–2 c.cm. of epinephrine (1 in 1000) being added to 250 c.cm. of the dextrose solution in order to improve the circulation. For the first 12 hours of treatment no fluid is given by the mouth except enough to moisten the mouth and pharynx, after which 10–20 c.cm. of water is offered every two hours. A two-to-one mixture of milk and water with 5 per cent. added dextrose is allowed when detoxication seems complete, and in no case before the end of 36 hours. Starting with 5–10 c.cm. of the mixture two-hourly, the amount is increased by 5–10 c.cm. at each feed for the next three or four days, a similar addition being then made every two or three days. The venoclysis is discontinued only after all signs of toxicosis have disappeared, and the whole routine is repeated if symptoms recur. The authors emphasise the importance of reducing examination and manipulation of the patient to a minimum; body temperature is measured in the axilla in preference to the rectum. The technique of prolonged venoclysis necessitates fastening the arm or leg used to a padded splint which in turn is fastened to the bed. After the vein has been exposed under local anæsthesia, a Lindeman (No. 18 or 19) cannula is introduced and tied in with catgut ligatures. The fluid is given from a gravity outfit with rectal drip bulb and a thumbscrew clamp. The period of venoclysis varied from 9 to 150 consecutive hours—usually from 36 to 72—and in only about one-third of the cases was a second insertion of the cannula necessary on account of clogging.

[1] Karelitz, S., and Schick, B.: Jour. Amer. Med. Assoc., July 30th, p. 366.

Whilst the technical difficulties of such a method of treatment may limit its applicability, the results obtained by Karelitz and Schick are extremely encouraging. In the last two and a half years only 6 of 53 cases so treated died—a mortality of 12 per cent. to be compared with an average mortality of 64 per cent. for the preceding ten years at the same hospital.

THE HISTORY OF THE C.D. ACTS[1]

THE history of the Contagious Diseases Acts is well outlined in a short life of that humane reformer, James Stansfield, which has just been written by the authors of the valuable pieces of social history entitled the "Town Labourer" and the "Village Labourer." Stansfield, whose memory is universally respected as a Victorian champion of sex equality, made his mark in the House of Commons immediately upon his election in 1859, obtained office three years later, lived down a furious agitation against him for his generous but indiscreet relations with Mazzini, and in 1871 obtained Cabinet rank, under Gladstone, as President of the Poor-law Board. Local government was at this period a subject of anxious consideration among the forward thinking, of whom Stansfield was a leader, and during his work for the reform of the poor-law, where he displayed his views on sex equality, he became intensely interested in the working of the Contagious Diseases Acts. These Acts came into force in 1864, with the well-meant intention to check the ravages of venereal disease among soldiers and sailors on the continental plan of *maisons tolerées*. The working of the Acts was soon seen to be open to abuse, and to be attended with gross persecution of a particularly helpless class; none the less the public value of the Acts was insisted upon by the majority of the public, and those who made the attempt to obtain their repeal found their task an extremely difficult one, and their words and actions subjected to persistent misrepresentation. The bitterness of the struggle was maintained by tactlessness and exaggeration on both sides, and it was 12 years before James Stansfield and Josephine Butler saw the cause which they led with such devotion finally triumph. This short book records a noble piece of social work, and Stansfield emerges from its pages as a brave and good man, able to discharge practical work without any faltering with his conscience.

GLYCÆMIA IN HEALTH AND DISEASE

MANY observations have been made on the behaviour of the blood-sugar in fasting healthy individuals and on the shape of the curve obtained by charting estimations of glucose tolerance in healthy persons and those suffering from various disorders. But these observations are widely scattered through medical literature and they have often been made upon relatively small groups of subjects suffering from a particular type of disorder. Dr. Birger Enocksson, working at the Serafimer Hospital in Stockholm, has done a useful piece of work in making an extended series of similar observations.[2] The investigation included a study of the fasting blood-sugar levels over long periods in health, which he found to be remarkably constant, and of the alterations brought about both in health and disease by the ingestion of a gramme of glucose per kilo of body-weight, and by the injection of 1 mg. of adrenaline. His observations help to bring

[1] James Stansfield. By J. L. and Barbara Hammond. London: Longmans, Green and Co. 1932. Pp. 312. 15s.

[2] Acta Medica Scandinavica, Suppl. xlv.

into proper perspective a large number of facts already known. Their principal interest, however, lies in the demonstration of the relationship between the glycæmia produced by the ingestion of glucose and that produced by the injection of adrenaline. In the healthy subject Dr. Enocksson found that the injection of adrenaline produced a far greater and more enduring glycæmia than that brought about by the ingestion of glucose; on plotting curves of the response in the usual manner that for adrenaline rises above and extends beyond that for oral glucose; this space he calls the "positive adrenaline area." In many morbid conditions, all having the common factor of cachexia or toxæmia, it was found that some degree of hyperglycæmia existed even in the fasting subject; in gastric carcinoma in particular, the fasting blood-sugar was often found at a level which, on the face of it, would have justified a diagnosis of diabetes, and the glucose-tolerance curve was higher and longer though never showing the typical plateau of diabetes. That this hyperglycæmia was not very characteristic of malignancy was shown by the finding of a very similar state of affairs in simple peptic ulcers and in a variety of other conditions, infective and non-infective alike, but all having the common factor of toxæmia or cachexia. The hyperglycæmia in all these morbid conditions differed from that of healthy individuals in that the blood-sugar was raised to a higher level by oral glucose than by adrenaline; that is to say, in contradistinction to the state of affairs in the normal subject the "adrenaline area" was negative—a fact which appears hitherto to have escaped recognition. It may not prove of much diagnostic value, but it serves to draw attention to the effect of adrenaline in altering the glycæmic response in conditions associated with toxæmia or cachexia, and to the danger of attaching importance to such alterations apart from their value as evidence of toxæmia.

B C G VACCINATION OF PIRQUET-NEGATIVE NURSES

THE Pirquet-negative probationers of the Ullevaal communal hospital in Oslo, whom Dr. J. Heimbeck has been inoculating with B C G since the beginning of 1924, are becoming objects of world-wide interest. In the period Jan. 1st, 1924–August 1st, 1931, 454 probationers were found [1] to be Pirquet-positive and were therefore not inoculated. Twelve of them (2·6 per cent.) subsequently developed signs of active tuberculosis. In the same period there were 253 probationers who, though found to be Pirquet-negative, were not inoculated with B C G. Among them there were 75 (29·6 per cent.) who subsequently developed signs of active pulmonary tuberculosis. A third group of 207 probationers in the same period were found to be Pirquet-negative and were inoculated with B C G. Twenty-one of them (9·6 per cent.) subsequently developed signs of active tuberculosis. The subcutaneous injections of B C G did not have a uniform action. Even on one and the same day, with the same dose and the same solution, the persons inoculated reacted differently; and while during certain periods the B C G was potent, it seemed to be partially or wholly inert at other periods. A striking difference was observed between the subsequent tuberculosis morbidity of those probationers who became allergic and Pirquet-positive after inoculation, and of those who did not. Among the 88 in the first category there was only 1 who subsequently developed signs of active tuberculosis, whereas there were 16 cases of tuberculosis developing among the 60 not rendered Pirquet-positive by the B C G. It should be noted that there were 4 other cases of active tuberculosis developing among the 43 probationers who were not included in this calculation for lack of adequate observation or the 16 in whom the Pirquet reaction was doubtful. As it may be assumed that all these probationers were exposed to the same risk in the course of their duties, Heimbeck is inclined to conclude that (1) the allergic properties and local action of B C G are variable, and (2) only those probationers who become allergic in response to inoculation develop immunity to tuberculosis.

[1] Norsk Magasin for Laegevidenskaben, May, 1932.

SHORTNESS OF BREATH

THE search for some objective explanation of the feelings associated with shortness of breath has long been unsuccessful. In a recent paper [1] Prof. O. Bruns and Dr. R. Herbst arrive at some interesting conclusions from their study of the alterations in the functions of the lungs in certain chronic pulmonary disorders. They first investigated, with a recording spirometer, the lung volumes, volume of respiration per minute, oxygen consumption, and the respiratory rhythm of a series of patients falling into three groups, according as they were afflicted with emphysema, with asthma, and with bronchitis. Their findings confirm those of previous workers, since they observed increased residual air and increased minute volume in emphysema, and reduced vital capacity in asthma, with increased frequency of respiration even at rest, so that with a low tidal air the minute volume of respiration is brought up to or even above normal. A prolongation of the time of expiration they found to be common to all these conditions and indeed almost always to accompany dyspnœa. Similar spirographic measurements were carried out while light work was being performed. Minute volumes rose just as in normal subjects, but the oxygen intake in unit time was less than in normal controls with the same amount of work and a greater oxygen debt occurred. The investigation of these patients in detail, however, presented many difficulties, including the satisfactory elimination of psychical factors. An attempt was therefore made to imitate the mechanical disadvantages under which patients with emphysema and asthma suffer. For the former group healthy subjects wore a broad band round the chest fixed in the extreme expiratory position; to imitate the difficulty experienced in asthma narrowing of the air-passages in the apparatus was arranged to hinder expiration. These models gave the same type of readings on spirographic investigation as their originals. A further experiment showed that on heavy work such subjects broke down much earlier from dyspnœa than normal controls, although the oxygen deficit was not unduly high, and the authors conclude that a reduction in oxygen intake is not the cause of such dyspnœa. Following their observations on the prolonged expiration time found in all their experiments with patients and models they set about disciplining the breathing during work. The subjects were encouraged to breathe in and out slowly and deeply and although the ventilation and the oxygen intake were actually less than with the natural uncontrolled breathing the breakdown at work came considerably later. The authors therefore concluded that the dyspnœa in chronic pulmonary disease was probably not due to any interference with ventilation or with gaseous exchange in the lungs,

[1] Münch. med. Woch., August 26th, p. 1385.

but was intimately connected with the prolongation of expiration. This led to a consideration of what effect such alteration in respiratory rhythm could have upon the circulation, and the conclusion is reached that prolongation of the expiratory phase will interfere with the venous return to the right side of the heart and hence cause congestion in the tissues. This in turn will produce some alteration in the hydrogen-ion concentration of the blood around the cells of the respiratory centre, a conclusion already reached by Prof. F. R. Fraser [2] from a study of the blood gases. Increased respiratory effort follows the stimulus of such a change in an individual already experiencing some resistance to normal respiration. The greater such resistance, the longer the expiration time and the greater the change in the centre. In this vicious circle lies the cause for the subjective feeling of dyspnœa. Prof. Bruns and Dr. Herbst believe that by disciplining the breathing so as to equalise the inspiration and expiration time the vicious circle can be broken and dyspnœa relieved. On this basis various empirical systems of breathing exercises have already been devised.

LUMBAR PUNCTURE IN NEUROSYPHILIS

AT the Fournier centenary congress held in Paris last May the problem of neurosyphilis was discussed, and a resolution was unanimously passed expressing the opinion of the congress that lumbar puncture was the best method of investigating the state of the nervous system in the earlier stages of syphilis, and that every syphilitic should have his cerebro-spinal fluid examined at some definite time after his infection. In a recent paper Ravaut [3] has given his opinion that the time at which one can learn most from this examination if, as is usually the case, it is only practicable to do one lumbar puncture, is the end of the third year. This opinion is based on 30 years' experience of lumbar puncture in the early stages of syphilis.

The abnormalities in the cerebro-spinal fluid may concern the cell count or the protein only, or these may be combined with positive Wassermann and colloidal reactions, forming what Ravaut calls a "complete reaction." The latter he considers as indicative of meningo-parenchymatous lesions, the intensity of which may be judged from the nature of the cerebro-spinal fluid changes. When the cell count only is increased, it is probable that only the meningo-vascular system is attacked, whereas an excess of protein (which is usually associated with positive colloidal reactions) is evidence rather of a parenchymatous lesion. His experience has confirmed what is now generally recognised—namely, that an increase in cell count and protein is commonly found during the early months of syphilis, but that the majority of these reactions disappear either spontaneously or under treatment without being accompanied by any clinical neurological sign. The minority are more intense and persistent, and these may be divided into two main groups :—

(1) Those in which no clinical symptoms make their appearance, but which persist for months or years. In such cases post-mortem examination may show evidence of old-standing lesions of the nervous system. Occasionally a slight clinical sign, quite disproportionate to the pathological lesion, makes its appearance in such cases.

(2) Those in which the cerebro-spinal fluid reactions increase progressively and persist, and in which, after a latent period of varying duration, the clinical signs of a severe neurological disease make their appearance. To this type Ravaut gives the name "pre-clinical."

[2] THE LANCET, 1927, i., 529, 589, 643.
[3] Ravaut, P.: Le Monde Médical, 1932, xlii., 763.

It is on these two types of reaction that attention should be chiefly focused, as they provide definite evidence of involvement of the nervous system. And, as the great majority of the more ephemeral reactions have disappeared by the end of the third year, it follows that a lumbar puncture performed at this time is more likely to give trustworthy information than one which is performed at an earlier period.

Ravaut has also produced evidence to show that neurosyphilis becomes progressively less latent, that is, less confined to changes in the cerebro-spinal fluid, the further from the time of infection the case is followed. Of the patients in whom cerebro-spinal fluid abnormalities were found at any period, only 5 per cent. of those examined during the secondary stage showed any clinical evidence of neurosyphilis, whereas from the end of the third year onwards the proportion gradually rose so that between the seventh and eighth years half showed clinical signs, and at the tenth year only one-fifth remained of a latent form. He considers therefore that an examination of the cerebro-spinal fluid becomes progressively less imperative after the end of the third year from the date of infection, although it may still be necessary when any neurological sign, however trivial, makes its appearance.

ACCIDENTS FROM DISINFESTATION WITH HYDROGEN CYANIDE

ALTHOUGH the destruction of rats and insect pests by fumigation with hydrogen cyanide is now widely practised on sea-going vessels, this fumigant has been little used in dwelling-houses, at least in this country. For certain purposes, as for instance the destruction of mites in furniture, it is the only sure method, and it has many advantages in the eradication of parasitic insects; but obviously the risk to human life is great and the fumigation should be carried out with meticulous precautions. Dr. F. M. Messerli,[1] has recently drawn attention to two deaths which occurred in Lausanne following upon fumigation with hydrogen cyanide for the destruction of bugs. In one case the operators had apparently taken no precautions to ensure that access to the fumigated flat was prevented during the preliminary period of airing, prior to thorough ventilation; in the other, the gas, which is highly diffusible, found its way through cracks in floors and ceilings to a lower flat and caused the death of one of the occupants. Messerli draws attention to the risk of retention of the gas in water, moisture, bedding, cushions, hangings, and foodstuffs, and he lays special emphasis upon the impossibility of limiting the field of action of the fumigant in tenement buildings, although this can apparently be done on ships. He cites ten instances of poisoning in Paris, reported by Kohn-Abrest, and advocates universal prohibition of hydrogen cyanide. In his opinion sulphur dioxide is sufficiently lethal to pests, and is far preferable in view of the lesser risk to human life. In this connexion we may note that sanitarians in British ports have not ceased to rely upon sulphur for the fumigation of ships, and that in other countries, where sulphur dioxide had fallen into disrepute, a more favourable opinion of its efficacy is gaining ground. The point still to be settled is the reliability of sulphur dioxide as a destroyer of the eggs of parasitic insects, a subject which was touched upon at a meeting of the Royal Sanitary Institute [2] some years ago, and is being investigated afresh by Dr. W. C. Gunn at Glasgow. The question deserves further consideration

[1] Schweiz. med. Woch., 1932, lxii., 880.
[2] Jour. Roy. San. Inst., 1925, xlvi., 286.

in this country because the danger to life from the indiscriminate use of hydrogen cyanide is far from negligible.

LEEDS THEN AND NOW

IN 1836, when the Municipal Corporations Act of the previous year came into force, the members of the Leeds town council, elected for the first time by popular vote, were mostly men with no experience of municipal administration. In an earnest endeavour to learn what tasks lay before them—and possibly appalled by the condition of the town—they did a very sensible thing and appointed a committee to make a survey. This report, which appeared in the *Journal* of the Royal Statistical Society, has now been reprinted with a foreword by Mr. Councillor Hawkyard, chairman of the mental health services committee and Lord Mayor in 1930–31. As a picture of town life early last century, with its commencement of the industrial era, and its rapid multiplying of the population, it makes interesting reading, and shows what enormous progress has been made in a relatively short space of time. Populous districts of the town were wholly without sewers; in rows of houses the cellar dwellings (of which there were over 500) were seldom dry; the conditions of the streets were indescribable, many of them being recorded as—

"Deficient in sewerage, unpaved, full of holes, with deep channels formed by the rain intersecting the roads and annoying the passengers; some ill-lighted, and some without lamps; with cellars sometimes so dangerously exposed that passengers are liable to frequent accidents; and sometimes rendered untenable by the overflowing of sewers and other more offensive drains; with ash-holes, &c., exposed to public view, and never emptied, or being wholly wanting, as is frequently the case, the refuse is accumulated in cellars, thrown into the streets, or piled against the walls."

In addition, nearly one-half of them were weekly so full of lines and linen as to be impassable for horses and carriages, and almost for foot-passengers. Public conveniences are "uncleansed because it is nobody's business," and as "everybody's perquisite, they become offensive in the highest degree." It is a picture which some modern critics of bureaucratic control might well pause to consider. Overcrowding was rampant; instances are given of five to six persons in each bed—"and there are generally two or three." One conclusion was certain, "that the greater part of the town is in a most filthy condition, which demands an immediate remedy."

Actually very little was carried out for many years. The council made application to Parliament for powers, the Leeds Improvement Act of 1842 being the result, but, Mr. Hawkyard concludes, "the council evidently became alarmed at the cost of the proposal, for very little was done by way of improvement until the council appointed a medical officer of health in 1866." Crime, religious accommodation, education, physical condition, occupational mortality, and the differential birth-rate all came under the eye of this committee. Their statistics of the size of family are of some interest. In 1925 the medical officer of health for Leeds drew attention in his annual report to the "disquieting significance" of the falling birth-rate, the fall, as is well known, not being equally distributed over all sections of the community. "It is from the poor that the population to an ever-increasing extent is deriving its recruits," he writes, "which means that the average fitness of the individual units is slowly but surely declining." Nearly a hundred years before his predecessors concluded that "thus it is evinced that the greatest proportion of births takes place among the lowest class; next among those employed in outdoor handicraft; then among indoor handicraftsmen; then among tradesmen; and lastly among independent and professional people." And this was before the popularisation of methods of contraception at whose door the differential birth-rate is so often entirely laid.

Leeds is not to-day without its particular and urgent problems, as perusal of its annual reports, and especially of such sections as that on smoke abatement will show. But in a little under one hundred years it has, in common with all England and Wales, travelled a long way in the endeavour to supply the amenities of life and the health essential to their enjoyment.

AN INDEX OF TOXIC DEGENERATION IN POLYMORPHS

THAT in states of toxæmia the cytoplasm of the polymorphonuclear cells undergoes more or less characteristic changes has long been recognised; they were carefully studied by Türck, and a description of them may be found in his "Vorlesungen über klinische Hæmatologie" (1912). The changes consist mostly in irregularity of the cell outline, increase in size and in basophilic tendency on the part of the cytoplasmic granules, and vacuolation. Various attempts have been made to assess the value of these changes in following the course of infective conditions, and lately M. S. Kugel and Dr. N. Rosenthal,[1] working at the Mount Sinai Hospital, New York, have investigated the use of the Schilling "hæmogram" and combined with observations on the degree of this toxic change. To secure a numerical expression of the amount of change they made use of the "degenerative index," obtained by dividing the number of polymorphs showing toxic change by the total number of these cells counted; the more severe the infection and the greater the degree of toxæmia the higher the index should be. For the identification of the toxic changes they found Jenner-Giemsa stain the most suitable. They regard the degenerative index as useful in itself, but its greatest value, they believe, is as a supplement to the hæmogram. The latter gives information as to the degree of maturity of the polymorphs and is some index to the urgency of the call upon the bone-marrow for their production. It gives, however, no information as to the nature of the call; a "shift to the left" may be produced either by an acute infection or by hæmorrhage. Such information is supplied by the degenerative index.

THE Murphy Oration of the American College of Surgeons will this year be delivered by Sir William Wheeler, past president of the Royal College of Surgeons in Ireland. The annual clinical congress at which it will be given opens at St. Louis on Oct. 17th. On leaving Dublin last week Sir William received presentations from Mercers Hospital and the Ministry of Pensions' Hospital, and from the City of Dublin Nursing Institution, of which he is chairman.

Dr. G. C. Anderson, deputy medical secretary of the British Medical Association since 1919, has succeeded to the post of medical secretary upon the retirement of Dr. Alfred Cox. Before joining the central staff of the Association, Dr. Anderson had considerable experience in general practice in Fifeshire, and was medical superintendent of the Wemyss Memorial Hospital. As a student of the University of Edinburgh he distinguished himself in several branches of athletics, and held the Scottish long-jump and hurdles championships. During the late war he was surgeon specialist to the 69th General Hospital in Egypt and in Palestine.

[1] Amer. Jour. Med. Sci., 1932, clxxxiii.

OPENING OF THE MEDICAL SCHOOLS

THE winter session opened last week with inaugural addresses at several of the London medical schools. Below we publish extracts from three of them. Dr. le Fleming spoke at St. George's, Prof. Halliday at Charing Cross, and Dr. McAlpine at the Middlesex Hospital.

THE GENERAL PRACTITIONER

BY E. KAYE LE FLEMING, M.B.
CHAIRMAN OF THE REPRESENTATIVE BODY, BRITISH MEDICAL ASSOCIATION

SOME day and somehow the health services of the country must be bound together in such a manner that every citizen of the State can obtain a full medical service in his home, or in an institution, where every resource of medical science will be at his service at a cost within his individual means. There is evidence enough that such provision can only be secured by some form of insurance, but the ultimate success of any such health machinery must depend on maintaining unimpaired the intimate personal relationship between doctor and patient which is the root principle of medical practice to-day in this country. In other words, it must be built up on a general practitioner basis.

I would plead to-day that the teaching hospitals should pay special attention to the needs of those students who intend to engage in general practice.

Have you ever considered the relation between the student and his teachers in this respect? Three-quarters of the students of a hospital will pass into general practice, and in the whole course of their preparation for this career, never once have they been taught or examined by anyone who has had experience in this kind of work. Is it not time that this fact was faced? If the answer is that the existing system is the best, let us at least know the reason why.

I hold that there is no better service that you can render to the public and the State than to turn out a good type of G.P., and I would like to see medical education primarily directed to this end. And I venture to ask this question. Could not the altered outlook I have mentioned possibly afford some solution of the curriculum problem? The medical student spends much time over detail which is of no real use to him as a general practitioner, and this time could be spent with advantage on subjects a knowledge of which is essential in general practice and which at present he has to acquire after he has qualified.

It has always seemed to me an anomaly that in an institution like St. George's, which in a sense is a factory engaged in large measure in producing the best type of general practitioner, there should be no place on the staff or in the teaching machinery for a general practitioner *as such*. A knowledge of general practice would be of definite advantage to every member of the profession whatever his specialty; but if there is one class more than another to which this applies it is to those who teach and examine our students. The difference between hospital and general practice is wide and important, and I am sure that something could be done to prepare the newly qualified for the difficulties he will have to face in general practice. Somewhere in the out-patient department, especially, there would seem to be room for a general practitioner's special knowledge, not only in a teaching capacity but possibly as an aid to a sifting process which would help to ensure that abuses of the department were checked. Whether such facilities, if available, would appeal to the student, experience alone can determine, for the natural aim of the student is to pass his examination, and he will look upon any case in the light of its value for examination purposes rather than its practical utility in his later career. The line of distinction, however, is not, after all, clear cut, and I am convinced that an experiment on these lines is worth while.

I would also make a strong appeal for special instruction in National Health Insurance work. It seems hard to believe in, and still more to defend, a system which ignores completely, in its teaching capacity, a State contract which every registered medical man is free to join the moment he is qualified, which, as I have stated, has been entered into by 15,000 doctors at the present time. Luckily in this case a few lectures can cover the most important difficulties, such as the regulations governing certification, prescribing, and record keeping. This service offers a quick entry into general practice, and I often think that the service is least understood by those of our own profession who are outside it. The old idea that the panel service is a step towards a whole-time State medical service is the exact opposite to the truth. It is, in fact, our greatest safeguard against it. It is a recognition by the State that a general practitioner service with free choice as between doctor and patient is the best system of medical attendance. The service should have the sympathy and goodwill of every member of the profession, for the most obvious reasons. If I am wrong in the view I hold, then I say the profession has been put to the test and failed, and that a State medical service, with the inevitable cleavage of the profession into factions, is the only possible line along which to expect future development.

At the present moment the State is committed to supply a general practitioner service to some 15,000,000 of the population of England, Scotland, and Wales, and has contracted with nearly 15,000 doctors to that end. The National Health Insurance service, though not without its imperfections, has been and is a success, though it works least satisfactorily in densely populated areas. Like so many institutions in this world (such as married life) you hear all about its failures and little enough of its success. It is not sufficiently recognised that National Health Insurance is a great scheme of *preventive medicine*. The doctor has every inducement to keep his patients well. The general practitioner is growing a little tired of having the words preventive medicine continually put to him as something new that he has never thought about. Preventive medicine means nothing more than the education of the public in the art of keeping well. The general practitioner has been doing this, as he does most of his work, quietly, steadily, and effectively, without making a fuss about it, from time immemorial.

Many of the hospitals of this country are in process of extending their scope in order to supply the needs of people of modest means. Contributory schemes are becoming universal, and special hospitals for this class of patient are increasing rapidly. In such a development it is inconceivable that the general practitioner should have no place. Somewhere and somehow you must avail yourself of his services to do the work he is well capable of doing. There are many difficulties but they are, I think, exaggerated and altogether insignificant in comparison to the principle at stake. Leave him out and you will encourage

him to find a substitute for your hospital which will not break the personal tie between patient and doctor, or at least tempt him to avoid using your institution as far as possible. Leave him out and in some areas, I am sure, you will run grave risk of dividing the local profession into two parties, to the detriment of both. Leave him out and you will deprive him of a most important means of keeping himself efficient and improving his value as a doctor.

The profession recognises that the hospitals must have all the material they want for teaching purposes; that every case of emergency or difficulty must continue to have free access to their doors; that nothing must ever be done to damage in the least their wonderful record of response to the needs of the sick. But if they make claim for increased support on the grounds of the steady increase of their out-patient work, and ask for sympathy for an overworked specialist staff, they must satisfy the profession at least that they are not encumbering their machinery with unnecessary work. If they spend money and the time of a specialist staff on work that can be just as well done by outside general practitioners, and for which provision has already been made by the State, they deserve as little sympathy in that respect as the general practitioner who takes advantage of their charity to escape his own obligations.

COLLEGIATE LIFE AND CLINICAL STUDIES

By W. R. Halliday, LL.D.
PRINCIPAL OF KING'S COLLEGE, LONDON

I am not going to pronounce upon the vexed question of larger and smaller clinical medical schools, though there seems to a layman a very valid line of argument which the smaller clinical schools can put forward. But I should like to say a word upon the merits and defects of the system by which the pre-clinical years of study are spent at a college, whether in Oxford or Cambridge or London and the clinical years in a hospital.

The supreme educational merit, as it seems to me, of this divided system is that the student—usually young, for the complete medical course is long—does his earlier years in close contact with students of other subjects and other faculties than his own and is not too early completely immersed in a professional milieu. For individuals—for we all know that some of the richest harvest of our university experience was derived not from the class-room but from sharpening our minds on and exchanging ideas with our fellow-students—I believe this contact to be of the very highest possible educational value. For medical science, as it advances, it is becoming more and more important to be at least on nodding terms with sciences not merely contiguous but already forming part of it. I think of the fact that at King's one of our readers in physics has taken a medical degree in his spare time and is now doing important work as consulting physicist to one of the London hospitals, while another of the younger members of the physics staff is leaving us to become a doctor.

The disadvantage in the severance of the scientific (if I may so call it for convenience) and the clinical stage is that some students may not adequately get their connexion into their system. They may learn up their anatomy and physiology, pass the Second M.B., and think they have finished with them. They will only be so foolish if when learning their anatomy and physiology they have regarded them as so much academic stuff to get up in order to answer questions in an examination paper. In King's College we are anxious as far as possible to obviate this danger to the weaker vessels. We are grateful to Mr. Macleod and Dr. Warner, and to those clinicians belonging to the other hospital medical schools with which we are especially associated, who have accepted honorary positions on our staff and so bring into the class-rooms of preparation for the Second M.B. the realisation that the science there learned is to be clinically applied. Equally our College teachers have tried, so far as possible, to help the clinical medical schools with lectures to remind students at a later stage that clinical practice and the successful treatment of particular cases rest upon the fundamental principles of science.

A great many of the most important things in higher education and research are so much a matter of atmosphere and attitude of mind that it is difficult briefly to make their value clear in a few words. I am personally sure that the indirect influence of mixing up medical students with students of other faculties is of the very greatest value. Similarly, I attach the very greatest importance to the coöperation which we are doing our best to promote between the staff of the College and the clinicians in the hospital medical schools. We are fully alive in the College to the danger of academic teaching in the medical sciences becoming divorced from "real life." The free interchange of thought and coöperation in research between clinical and pre-clinical teachers will be promoted in the College by any means in our power, and I am glad to think that our new Hambleden department of anatomy, which was opened last year, will provide on our side the necessary laboratory equipment for doing our full share in carrying this ideal yet further than we have been able to do in the past.

MIND AND BODY

By Douglas McAlpine, F.R.C.P.
PHYSICIAN IN CHARGE OF THE NEUROLOGICAL DEPARTMENT, MIDDLESEX HOSPITAL

Freud's views may be briefly summarised as follows. Everyone has within him certain instinctive feelings. Some of these feelings and wishes are felt to be wrongful or unpleasant—that is to say, they cannot be reconciled with the person's idea of right or wrong, or they may offend his pride. They are therefore relegated to the unconscious by a process of forgetting or (to use the psychological word) repression. If this process is only partially successful it will produce a state of mental discomfort which may in certain individuals lead to the development of a neurosis. According to Freud the neurotic is the person who instead of attempting consciously to find a solution for his problem shoves it aside or represses it. Treatment consists in bringing these conflicts to the surface and persuading the patient to face them. This constitutes psycho-analysis, and credit must be given to Freud as one of its earliest exponents. Unfortunately he overstressed the part played by sex in the ordinary individual's life, and this undoubtedly had a prejudicial effect on the acceptance of psycho-analysis by both the medical profession and the lay public.

Adler, a former pupil of Freud, lays especial stress on the fact that no two people are alike mentally as well as physically, and that it is necessary to study each case separately. The name "individual psychology" has been given to this school which at present has many adherents in this as well as in other countries. Briefly, Adler's teaching holds that a person's character, or as he calls it "style of life," is formed during the first eight years of life and that an adult

will react to his difficulties in the same manner as he did in childhood. The normal person faces difficulties in a common-sense way. He depends upon courage or confidence which has been built up by experience in childhood and upon a feeling of secure membership of the human family, a feeling which depends upon the harmony of his own life.

Family life represents on a minor scale what social life will be when the child grows up. The adult neurotic is the product of an abnormal attitude to life adopted in childhood.

Can neuroses be prevented and can they be cured? The answer, I think, to both of these questions is in the affirmative. The past 20 years have created a feeling of insecurity largely attributable to the war and the disappointments of peace. People have been subjected to unusual strain and it is little wonder that many have broken down. Most of us are potential neurotics and therefore we should understand and by encouragement help those who either by their parentage, upbringing, or circumstances, have lagged behind in the race of life. The principal duty of parents towards their children is to teach them at an early age to have courage. Most young children are fearless, they become frightened of situations by the remarks and attitude of their parents. If every anxious parent realised that the child's mental development was of more importance than his physical health and the part which he or she played in the formation of a child's character, there would be far less unhappy and many more useful people in the future. Educational authorities are awakening to the importance of psychological principles in the teaching of children, and that a class of children cannot be taught according to methods of mass-production, but that each member of that class has an individual personality, and that the successful inculcation of self-confidence into each child depends on a teacher's appreciation of this fact.

There ought to be wider facilities for psychological treatment of children and their mothers. As far as I am aware there are at present only two hospitals in London where special clinics of this sort exist.

Treatment may take one of two forms, suggestion and persuasion or some form of psycho-analysis. Suggestion is a method of treatment which has been used by physicians ever since they began to practise the art of medicine. The mere assurance of a doctor that there is nothing seriously wrong and that the patient will lose his symptoms has always a beneficial effect on the neurotic subject. Allied to suggestion is persuasion. This method was used by Dr. Hurst and others during the war. Soldiers suffering from hysterical paralyses were made to walk in a day, sight was restored to the blind, and hearing to the deaf. In other days and times such cures would have been spoken of as miracles. The same methods of suggestion and persuasion applied in civil life are not always so successful. In the war cases the explanation was not difficult to find—namely, the fear of war. In civil life the cause of the symptoms may be obscure and it is necessary to hear the patient's life story and to show him how and where he has failed and the path he must tread in the future. The mention of psycho-analysis to a patient often conjures up in his mind the thought of a painful confession in which the patient is subjected to a severe cross-examination chiefly on sexual topics. I have tried to make it clear that modern psychotherapy is not concerned paramountly with sex, but with the person's life pattern as formed in childhood and his reactions to difficulties later. Such an inquiry requires to be carried out first and foremost by a doctor who feels sympathetically towards the patient. Apart from exceptional cases it requires no advanced technique beyond a working knowledge of psychological principles.

Those of you who are commencing your medical studies will soon be interested in the study of the human body and its reaction to disease. Try from the first to remember that, however interesting the case may be from the organic point of view, the patient has also a mind. When you enter upon practice you may find that most of the interesting conditions you saw in hospital never seem to come your way. Indeed, many of your patients will complain of "nerves" or of symptoms for which you can find no cause. Such a patient is almost certain to be up against some problem which he is evading. You will, I hope, attempt to ascertain the nature of his problem. In the majority of cases you will be able to make the patient know himself and understand how his symptoms have developed. You will encourage him to face his difficulties and sometimes you may have the satisfaction of seeing him recover his health and happiness.

It may be objected that the general practitioner has no time for this sort of thing. Surely it is much better in the long run to spend an hour with a patient on two or three occasions with a chance of doing him some good than to hope that bottles of physic may cure him. You will meet with cases that do not respond to this simple psychological treatment. These you should send to the psychological department of a hospital or a specialist in psychotherapy. But the general practitioner as family physician is best suited to handle early cases of neurosis in adults and children.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED SEPT. 24TH, 1932

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 7 (last week 19); scarlet fever, 1613; diphtheria, 908; enteric fever, 94; acute pneumonia (primary or influenzal), 465; puerperal fever, 44; puerperal pyrexia, 103; cerebro-spinal fever, 36; acute polio-myelitis, 33; acute polio-encephalitis, 8; encephalitis lethargica, 11; continued fever, 1 (Winsford, Cheshire); dysentery, 15; ophthalmia neonatorum, 72. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on Sept. 27th–28th was as follows:—Small-pox, 27 under treatment, 2 under observation (last week 22 in all); scarlet fever, 1303; diphtheria, 1418; enteric fever, 23; measles, 269; whooping-cough, 349; puerperal fever, 24 (plus 10 babies); encephalitis lethargica, 231; poliomyelitis, 5; "other diseases" 147. At St. Margaret's Hospital there were 16 babies (plus 10 mothers) with ophthalmia neonatorum.

Deaths.—In 117 great towns, including London, there was no death from small-pox, 2 (0) from enteric fever, 4 (0) from measles, 6 (2) from scarlet fever, 15 (2) from whooping-cough, 24 (7) from diphtheria, 68 (16) from diarrhœa and enteritis under two years, and 7 (1) from influenza. The figures in parentheses are those for London itself.

The deaths from diarrhœa are diminishing, the acme having been reached in the week ended Sept. 10th, when the number was 89 for the great towns and 29 for London; Liverpool still stands highest with 14 deaths, West Ham following with 3, no other town reporting more than 2. East Ham and Walthamstow each reported 1 death from enteric fever. The fatal cases of diphtheria were widely distributed, 2 each being reported from East Ham, Liverpool, and Salford.

The number of stillbirths notified during the week was 261 (corresponding to a rate of 42 per 1000 total births), including 43 in London.

POST-GRADUATE LECTURES

We continue this week the publication of abstracts of some of the lectures delivered at the autumn post-graduate courses of the London teaching hospitals. Those summarised below were delivered at St. Mary's (Mr. Leslie Williams and Dr. Reginald Miller), King's (Mr. Yates Bell), and Charing Cross (Mr. Crook).

ANALGESIA AND ANÆSTHESIA IN OBSTETRICS

(MR. LESLIE WILLIAMS)

In discussing this question we must realise that considerable progress has been made in recent years. No longer is the parturient woman expected to bear the pains of labour as the natural thing; nor is a whiff of chloroform towards the end of the second stage accepted nowadays as a reasonable palliative. In fact, I think we are trying to travel too fast along a difficult path and, though advance and research in the relief of pain in childbirth is admirable in the hands of qualified and skilled practitioners of medicine, personally I deprecate the present tendency towards the widespread exhibition of analgesic drugs and anæsthetics by midwives. For the administration of an anæsthetic always requires skill and experience, and in obstetrics the judgment of dosage is extremely difficult if one is to strike the balance between preservation of uterine contractions and absence of memory of suffering.

Passing to practical methods which can be used by practitioners, I think the most generally useful analgesic for the *first stage of labour* is morphia and scopolamine. I advise morphia gr. ¼ and scopolamine gr. 1/100 as soon as the pains are really beginning to cause distress. This is often found to be at the time when the cervix is completely "taken up" and dilated to about two shillings. Subsequent doses of scopolamine gr. 1/450 can then be given at intervals of one to two hours, and usually the degree of analgesia and amnesia thus obtained is fairly satisfactory. However, the estimation of the quantity of the drug required for any individual patient is very difficult, and, if the method is to be pushed to the fullest, the complete "twilight sleep" technique may be adopted. In this the time for the administration of the repeated scopolamine doses is judged by means of a "memory test" and too much notice must not be taken of the appearance of suffering during a pain if the patient sleeps in the intervals. A few words of warning are, however, necessary. The "twilight sleep" patient must never be left unattended for a single moment. One of the reasons for this is that they become very thirsty, and even if given drinks, they may, if left alone, get out of bed in a semi-conscious condition and drink any antiseptic lotion that may be lying about. Again, the condition of the bladder must be watched very carefully and catheterisation employed when necessary. In some cases violent mental excitement is manifested, and in these, as in others in which overdosage is indicated by an increased pulse-rate and slowing of the respiration, the hyoscine must be stopped immediately. In cases which are responding well the scopolamine injections may be continued for many hours and even throughout the second stage, but it is customary when the head appears at the vulva to discontinue the twilight sleep and to change over to one of the anæsthetics which I shall shortly describe as being of value in the expulsive period.

Among other objections which have been raised against morphine-scopolamine analgesia is that the child is born in a state of apnœa. True; but I feel that all such children will, if suitably treated, recover. The suitable treatment consists essentially in keeping the child still and warm, clearing the air-passages, giving stimulants, the administration of 6 per cent. carbon dioxide in oxygen, and, above all, the avoidance of violent methods of artificial respiration.

Recently the various barbiturate preparations have been extensively employed, and perhaps the most widely used has been Nembutal. With this drug I have had some very satisfactory cases and some very unsatisfactory ones. Some of the best results have been obtained by the following scheme of dosage. Morphia gr. ¼ and scopolamine gr. 1/100 are given when the pains are first causing real distress. This is usually followed by sleep, and on awakening the pains again become regular and strong and are associated with more or less distress. At this point two capsules (grs. 3) of nembutal are given, and are immediately followed by a drink of water as hot as the patient can drink. I think this helps to dissolve the capsule and to assist the absorption of the drug. A third capsule may be given three hours later if the patient is obviously losing the effect of the first dose, and a fourth a further three hours later. Generally speaking I do not think this dosage of four capsules (grs. 6) should be exceeded, and in a fortunate case the labour is nearly terminated and the suffering of the remaining expulsive pains can be relieved by chloroform or gas-and-oxygen.

I have tried the method of giving nembutal and chloral as described by J. V. O'Sullivan and W. W. Craner [1] but have not been very successful, and in my experience it has no advantages over nembutal alone. And I repeat that nembutal is by no means ideal since there is an enormous variation in its effects on various people, and in using it I have a very definite fear of causing poisoning.

Sodium amytal should theoretically be superior to nembutal for obstetrics since its action is less intense but more prolonged. It can be given in approximately double the dose of nembutal and the doses spaced further apart. I have little experience of this drug at present. Avertin might be used, and has, in fact, been extensively tried in obstetrics, though more for the second stage than for the first; but rectal administration of a drug and the subsequent spilling of some with the descent of the head is a disadvantage. Personally I think there is no place in obstetrics for the intravenous administration of nembutal, &c. Apart from the well-known dangers, the action of the drug is much too short-lived to be of use in counteracting the prolonged suffering of childbirth.

Finally, before proceeding to discuss briefly anæsthetics for the second stage of labour, I should like to draw the attention of those who can study the technique in hospitals to the Gwathmey method. In this, morphia has its action intensified and prolonged by being given intramuscularly in 2 c.cm. of 50 per cent. magnesium sulphate solution. Two further injections of the magnesium sulphate solution alone are given during the first stage, and just before the second stage a mixture of ether and olive oil is injected into the rectum.

In the *second stage of labour* the best anæsthetic is gas-and-oxygen. It is given with the onset of each

[1] See THE LANCET, 1932, i., 119, 263, 1175; also July 23rd, p. 182.

pain, and the patient is allowed to regain consciousness in between. As in everything else, there are disadvantages: the apparatus is heavy and bulky, the services of a skilled anæsthetist are required for a prolonged period of time, and—a point often overlooked—the patient wakes up after each administration and asks pitifully "is it all over yet?" However, with all its disadvantages, it is still the best, and the alternatives of chloroform, usually given from a Junker's apparatus by the nurse under the supervision of the obstetrician, or better, ether or other inhalation anæsthetic administered by an anæsthetist, have the disadvantage that uterine contractions are seriously interfered with unless the minimum useful dosage only is given, and that only during the pains. Furthermore, the child is often born to some degree anæsthetised.

For some time past at many hospitals experiments have been made with 20-minim capsules of chloroform, wrapped in several thicknesses of lint which, when broken, allows the parturient woman to inhale the chloroform vapour from the packet; the capsule is held over her mouth either by herself or by a nurse in attendance. This method has been devised in the hope that it will enable midwives to relieve the sufferings of patients in their charge. I hope it will be found to be successful, but having tried the inhalations myself, I am rather afraid that there may be accidents from the inhalation of too concentrated a vapour. However, results will show, and in the cases I have seen the relief of pain seems to have been considerable.

I do not propose to-day to deal with extradural or spinal analgesia in obstetrics, for these are methods useful chiefly in hospital practice.

TREATMENT OF COLI BACILLURIA AND PYELITIS

(Mr. YATES BELL)

I PROPOSE to dismiss the treatment of the acute condition in a few words. The patient must, of course, be confined to bed between blankets and remain in bed until the temperature has been normal for at least seven days. Sweating is to be encouraged by means of hot-water bottles, but diaphoretic drugs are now eyed with disfavour; an initial purge should be given, but excess of purgation after this is to be avoided. In the diet, fluids only are allowed at first and here it must be emphasised that milk is to be excluded absolutely until recovery is complete; as the patient improves the intake may be increased with fruit, vegetables, and carbohydrates, and then with chicken—other meats and milk being disallowed until complete recovery. Alkalis, with belladonna, must be administered until the temperature has been normal for at least two days and, as Frank Kidd pointed out, it is wise for the doctor to visit the patient frequently to test the urine with litmus and increase the dose of citrates, &c., until the urine is well alkaline. When the febrile state is over, a course of urinary antiseptics should be started and this should be continued for three months; the various drugs and their methods of administration I will refer to later.

Chronic *coli* bacilluria I deem to include delayed resolution after a first acute attack and repeated exacerbations (which may of themselves be acute or subacute) of a mild or latent infection. Any pyrexial attack must be treated under the rules given for the acute condition, but when the fever disappears the case should be treated under the following scheme: in chronic *coli* bacilluria I do not include gross disease such as infection complicating enlarged prostate or stone in the bladder; nevertheless, such conditions must first be excluded by careful clinical, cystoscopic, and radiological examinations. Assuming the infection to be so-called primary, it is still important to search for a possible focus. The appendix is often at fault, less commonly the nasal sinuses, tonsils, and teeth; the large bowel may be to blame.

It is my principle to attack these chronic coli bacilluria cases with three groups of treatment which I will call (*A*), (*B*), (*C*).

(*A*) Firstly a combination of *general hygiene, diet,* and *drugs* must be tried. Attend to the large bowel; it is just as important to avoid diarrhœa and fluid motions as it is to avoid constipation. Salol grs. 10 or hydrarg. c. cret. gr. ½ may be given t.d.s. as intestinal antiseptics. Milk and red meats should be avoided; fluids should be taken freely at all times, and lactose (2 oz.) may be given daily to promote the natural growth of *B. acidophilus* in the intestine. Drugs are the same as have been known for some years, but more attention is being paid to the reaction of the urine while such drugs are being administered. The colon bacillus is inhibited by an alkaline urine (neutral pH 7) or by an acid urine when the pH drops below about 5·6. It is therefore important to pay more attention than has been the custom to the reaction of the urine, testing with litmus; the urine must be shown to be very acid or very alkaline, according to the drugs being given in association at that time.

(*a*) Alkalis are the usual potassium citrate, potassium bicarbonate, and sodium bicarbonate. They must be given in doses large enough to render the urine strongly alkaline.

(*b*) *Acid sodium phosphate* is still the most popular acidifier of the urine and it does increase the amount of acid radicles therein but it does not increase the hydrogen-ion concentration sufficiently (depress the pH) in many cases. The dose usually given is grs. 30 t.d.s., but this is often insufficient; as much as grs. 150 may be given t.d.s., the sign of overdose being diarrhœa due to its salt action on the bowel. It should be given before meals, with the antiseptic after meals, for its excretion in the urine is slower. Benzoates and salicylates are similar but much less effective.

(*c*) *Ammonium chloride* grs. 20 t.d.s. in a mixture with the urinary antiseptic is good and will give a lower pH in the urine than can be obtained with acid sodium phosphate.

(*d*) *Ammonium nitrate* 0·5 g. in a keratin-coated capsule is effective. Twelve capsules are given during the day. The urine can be best acidified by this method.

(*e*) *Hexamine* to be given with an acid urine is still the most effective of the urinary antiseptics. It is probably best prescribed in a mixture with ammonium chloride and extr. glycorrhizæ liq.

(*f*) *Cystopurin*, a combination of hexamine and sodium acetate, is less irritant than hexamine, and may be prescribed for those people whose digestions are upset by hexamine.

(*g*) *Hexyl resorcinol* should be given in capsule form increasing the dose to 3 capsules t.d.s.; during its administration fluids should be restricted and no alkalis given, for its action depends largely on surface tension.

(*h*) *Methylene-blue* in a pill of grs. 3 is useful, especially as it may be administered in association with an alkaline prescription.

(*i*) *Mercurochrome*, 4 mg. per kg. of body-weight, is given intravenously; but it is sometimes toxic and not without danger, and in my opinion its advantages do not outweigh the risks.

(*j*) *Neutral acriflavine* gr. ½ t.d.s., as a tablet, is of definite use.

A scheme for administration of these drugs should be on the following lines: An alkaline mixture for a fortnight, then an acid mixture for six weeks, giving hexamine for the first two weeks, hexyl resorcinol for the next two weeks, and acriflavine or cystopurin for the third two weeks. Drugs and hygiene should be continued for two months, and if there is improvement this cycle may be repeated; but if there is no improvement other means must be tried.

Vaccines, in my opinion, are a definitely helpful adjunct and that view I believe is now generally held. It is my custom to give vaccine treatment coincidently with the diet and drug course, but this is not always possible in general practice and where the number of hospital out-patients is very great;

where difficulties arise vaccine should be reserved for cases not responding after two months' drug treatment and then combined with a further course of these urinary antiseptics. The vaccine must be autogenous and the dosage small; it is my rule to begin with half a million, increasing up to five million, and eventually to ten million at intervals of ten days. The urine for vaccine preparation must be obtained through catheters from which any sterilising antiseptic—e.g., biniodide or formalin—has been removed by sterile water or saline; even traces will inhibit the growth of bacteria in culture.

(*B*) *Lavage of the renal pelvis* should be the next line of attack in cases of failure of drugs and vaccine. It is now a definitely established treatment, thanks largely to the work of Frank Kidd. It should be done by an experienced urologist and reserved for chronic cases except in exacerbations of acute pyelitis of pregnancy. The pelvis is washed out with sterile saline through a ureteric catheter and 4 c.cm. of 1 per cent. silver nitrate or 5 per cent. colloid silver is installed into the renal pelvis; the catheter is then withdrawn, allowing the antiseptic fluid to escape gradually. The treatment may be repeated at seven-day intervals and as many as six or ten wash-outs may be given.

(*C*) *Ketogenic diet.*—This is a new and very promising method of treatment. Owing to the nature of the diet it is necessary to carry it out in consultation with a biochemist; this very fact, of course, will cause the treatment to be reserved for cases that have not responded to more convenient methods; but it has given marvellous results when carefully applied. It depends on the replacement of the carbohydrates in the diet by fat until ketones are present in the urine as indicated by the ferric chloride test. It is not quite certain whether there is an antiseptic virtue in the ketones, or whether it is the associated lowering of the pH (increase in acidity); but apparently the best results are obtained when the pH is low and it is customary to combine the diet with the administration of ammonium nitrate in 0·5 g. enteric-coated tablets (12 a day). It is also essential that the patient can physically digest such a fat diet. The patient must be admitted to an institution for three or four days to allow the biochemist to work out the diet appropriate; he is then allowed to go home, but he must keep strictly to the diet for a month, after which a gradual increased leniency is allowed.

Bacteriophage treatment I mention merely for completeness. Very few writers now claim successes, and these are chiefly in acute cases which would probably recover without the bacteriophage. Bacteriophage is probably of little help in chronic cases, and I do not think its value justifies its use.

SOME SCHOOL PROBLEMS IN PRIVATE PRACTICE

(DR. REGINALD MILLER)

CHILDREN of well-to-do parents are at school for some ten or eleven years, and these years cover most important periods of physical and mental development. We cannot therefore, as doctors, afford to neglect the problems that may arise in connexion with school life, even though they are often of only indirect medical interest. We should not regard the school years as a time of unavoidable strain and difficulty for a child; rather should we think of them as an opportunity to benefit the child in every way. Often, as we know, in the case of a delicate town-bred child, the wise choice of the right boarding-school is the one thing that sets the child up in health. It is, then, with the idea that the very best use should be made of a child's school years that I discuss just a few of the difficulties which may lead to incomplete success or even failure.

To take first the choice of a school for an individual child. The preparatory schools for boys and the private and public schools for girls exist in an atmosphere of considerable competition. There is no need for parents to be dissatisfied with the child's school: there are many more to choose from. As a matter of fact, in the best of these schools the standard is extraordinarily high. The great public schools for boys are more outside this commercial competition, but they have their great traditions to sustain them. In choosing a school it must be remembered that every school has its periods of ups and downs. Taken as a whole, day-school is more of a strain on a child than boarding-school. It necessitates often very long hours, keeping up a dual set of interests, and is lacking in the fuller life of the boarding-school. The solitary child should certainly go to boarding-school, and the same may be said of the delicate town child. In this case the right climate should be chosen, and its good effect can hardly be over-estimated. There are many preparatory schools which may be absolutely trusted to attend to the needs of a delicate child, often with most gratifying results.

Secondly, to get the best results of school on a child's health and character, the school and the parents should coöperate, playing into each other's hands for the sake of the child. Unfortunately, this coöperation is in many cases never established. Parents are apt to regard their own child too much as an individual; whereas the head of a school, while desiring to give individual attention to each child, has to set the tone of the school as a whole. Parents should not be jealous of this. If they thought the matter out they would realise that they do not send their child to school to learn merely lessons, but a great many other things, all of which depend on the atmosphere or tone of the school. It is within the atmosphere of sensible discipline that the child gets freedom from being corrected and dragooned, and it is because of this atmosphere, acting insensibly and automatically, that the child learns to choose for itself to behave sensibly, unselfishly, and so on. Parents should be ready to tell the head of a school their difficulties with their own child, and should not be hurt when they are told of the child's faults at school.

Lastly, of more directly medical interest is the question of fatigue brought about by the strain of school life. The effects of this are largely seen in connexion with the nervous system of a child. It may become dull, apparently lazy, and lose its place in the class; or in the case of highly strung children, it becomes restless, emotional, irritable, wildly disobedient, and negative. Some of the causes of such fatigue lie in the child itself, but others come from the school régime. Of the latter may be mentioned too long hours, too much noise and ragging, too much activity before breakfast, and, in the case of older children, possibly too short hours of sleep and insufficient or improper food at night. The strain of examinations, now that all public examinations are to a large extent competitive, is capable of doing children great harm. These effects of fatigue, as has already been said, are largely shown in connexion with the nervous system by alterations in mental capacity, behaviour, and so on; and there is a tendency

amongst some of the medical profession to suggest it is the school doctor's part to spot, study, and treat cases of this type. As far as normal children, as opposed to psychopathic children, are concerned, I think this would be a mistake. Left to themselves and rested, these children will right themselves. Too much apparent interest in their failings is harmful, whether this interest is taken by the school-teachers or the doctor. In any case, no school doctor can be in sufficiently close contact with the child to see the early signs and symptoms of over-fatigue, and from the responsibility of being able to spot the tired child and differentiate it from the wilfully lazy or naughty child, school-teachers cannot possibly escape.

ON THE TREATMENT OF RECTAL DISEASE

(MR. ERIC CROOK)

THE *ischiorectal fossa* is a part of the body particularly liable to infection. It is filled with fatty tissue which is continually altering in shape, with the degree of distension of the rectum, and it is not well supplied with blood-vessels. Moreover, it is near to a source of infection; indeed, nearly all infective lesions of the fossa are caused by organisms from the bowel. Very often infection travels by way of a fissure. Suppuration may take place in the fossa without easily detectable physical signs; for the fatty tissue can adapt itself to pressure, the skin over this region is thick, and the subcutaneous tissue is dense, so that many ounces of pus may be present without obvious signs. Early incision, however, is essential to successful treatment and the prevention of fistula formation. Extension of infection leads to necrosis of fat. Cases in which there is brawny swelling and fluctuation are easy to recognise, but in others there may be only tenderness on pressure and no fluctuation. A rise of temperature and leucocytosis, in association with tenderness in the ischiorectal fossa, should suggest suppuration. There may be no signs other than slight asymmetry of the ischiorectal fossæ that can be detected with the patient in the genupectoral position, and the exploratory needle gives valuable information in doubtful cases. The incision should not only be T-shaped, but the two right-angled flaps at the junction of the vertical stroke with cross-bar of the T should be cut away to give free drainage and to allow of granulation from below. Healing is usually rapid. Dry wool is desirable as the first dressing to check bleeding. After a few hours this should be replaced by a fomentation, and later moist dressings are the most comfortable; gauze soaked in hydrarg. perchlor. solution, 1 in 1000, laid upon the surface of the wound is satisfactory. In a doubtful case it is better to incise unnecessarily than to miss the presence of suppuration.

A distinction must be made between internal and external *hæmorrhoids*. Patients often come complaining of "an attack of piles," which often means that a small vein connecting the internal and external hæmorrhoidal plexuses has given way and formed a hæmatoma. This constitutes an external pile. On examination there is a bluish swelling ranging in size from the dimensions of an orange pip to those of a grape. It is tender on pressure, and is preventing the external sphincter from closing properly. An incision should be made under local anæsthesia to shell out the clot. An elliptical snip is made with scissors, and the groove left by removal of the clot usually heals readily. If left, the clot may suppurate or else contract, leaving a pellet of fibrous tissue, an anal tag. In internal hæmorrhoids the attack may be due to phlebitis with or without thrombosis. A large pale œdematous swelling prolapses and appears at the anal margin. It can be treated by local applications, but it is probably better not to defer operation. In the uncomplicated case opinions differ on the value of injection versus operative treatment of internal piles; with injection there is little discomfort, whereas the post-operative period is painful. On the other hand the results of operation are more permanent. Probably injection should be reserved for recent cases where the hæmorrhoids are no more than dilated veins; in old-standing cases there is much fibrous tissue, and injection results in formation of a pad of fibrous tissue which still has a tendency to be forced down through the anal sphincter; for such fibrotic cases operation is necessary. As with ischiorectal abscess, the best post-operative dressing for piles, internal or external, is a moist one. After applying hydrarg. perchlor. dressings for a week a change can be made to ung. hydrarg. subchlor.

Well over half the cases of *cancer of the rectum* coming up for treatment have reached the inoperable stage; the rectum, although highly sensitive in the lower part is relatively insensitive higher up. Although rectal cancer is not a rapidly growing variety it usually reaches an advanced stage without causing pain or discomfort. The scientific treatment is complete excision of the rectum and its lymphatic drainage by the abdomino-perineal method, but the case-mortality is high and the alternative treatment is perineal excision of the rectum following a previous colostomy. Where radical removal is impossible, attention must be given to relieving symptoms and reducing the discharge as much as possible. In those inoperable cases in which colostomy is performed the patient lives longer than in cases where no operation is undertaken. After colostomy the surface of the growth can be kept clean by washouts from below; pain, discharge, and the rate of spread are diminished, and in a few cases an apparently inoperable growth subsequently becomes operable as inflammatory induration round it subsides. In obstruction of the bowel by growth colostomy becomes imperative.

Palpation of the rectum is made easier if the patient lies on the right side and the left index-finger of the examiner is used. Owing to the anatomical relations of the pelvic colon, the examiner can palpate higher up with the patient on the right side rather than the left. In passing a proctoscope or sigmoidoscope the opposite holds good, because with the patient lying on the left side the bowel falls away from the nose of the instrument, which is therefore more easily passed.

HOSPITAL EXTENSIONS.—A new out-patient department has been added to the Victoria Jubilee Infirmary at Tynemouth with a sum of £15,000 bequeathed by the late Mrs. Wilson, of Easby House, North Shields. The building includes massage rooms, a theatre with anæsthetic room, sterilising room, recovery room, and other adjuncts. The warming is by radiation from the roof.—A casualty ward and staff bedrooms have been added to Faversham Cottage Hospital. Hitherto minor operations have usually had to be performed in the wards.—The Murton Street Home of the Sunderland district nursing association has been enlarged by the adaptation of an adjacent house. The work has cost £1300, of which £600 has been derived from the estate of the late Miss Emma Richardson.—Two maternity wards of five beds in all, which have been added to the Nairn Town and County Hospital, were opened last week by the Countess of Leven and Melville. A legacy of £4350 left by the late Mr. Andrew Morison, of Nairn, provided most of the cost, which amounted to about £5000.

SPECIAL ARTICLES

MEDICINE AND THE LAW

Septic Abortion: Coroner's Suspicions

AT an inquest last week upon the death of Eileen Woollard, an unmarried woman, 20 years of age, a verdict of "death from septic abortion" was recorded. The Paddington coroner, as will presently appear, found grave cause for suspecting that an illegal operation had been performed. The names of no fewer than six medical practitioners were mentioned during the inquest, and, while it was clear that the coroner made no reflection upon some of these, it was also clear that he was less than satisfied with the actions of others. The respective parts played by the six practitioners, who may for convenience be referred to as Drs. A, B, C, D, E, and F, are indicated in the following summary of the evidence. The dead girl became ill at Farnborough and stayed in bed for several days, Dr. A visiting her professionally in the evenings. On his advice her mother took her to London to consult Dr. B, who, on Wednesday, Sept. 14th, engaged a room for her at a nursing-home. Dr. B, described as an anæsthetist, was closely questioned by the coroner. He said he was not in general practice. "Why," inquired the coroner, "did a woman like Mrs. Woollard come up from Farnborough to see you, an anæsthetist, about her daughter who was unmarried and having an abortion?" "Because Dr. A sent her," replied Dr. B. "Why did he send her to you?" continued the coroner. The witness answered that Dr. A had to leave England and had no one else in London to whom he could send the patient. To resume the sequence of events, after engaging the room in the nursing home, Dr. B next day (Thursday) administered an anæsthetic and Dr. C operated. Dr. C was examined by the coroner as to his introduction into the case. He explained that Dr. B, in calling him in, said he had himself not yet seen the patient but gathered that it was either an incomplete abortion or a threatened miscarriage. The coroner suggested that there was a discrepancy between this version and what the witness had told the police. On the Friday Dr. B came to the nursing home several times. Dr. C also saw the patient that day, and found her very ill after the operation. Pressed by the coroner as to why he dropped out of the case at this point, Dr. C said he was not available later. Thereupon the coroner expressed his wonder whether perhaps Dr. C's object might not have been to avoid his name appearing on the death certificate. On this same day three fresh practitioners are introduced. Dr. D calls in Dr. E, who finds the patient suffering from septicæmia and peritonitis. Dr. E, in turn, calls in Dr. F. The latter concurring, Drs. E and F perform a further operation early on the Saturday morning, but the girl dies. The death certificate was signed by Dr. E, who was the last to see the patient alive.

Eileen Woollard died on Sept. 17th. On the 20th two women were found dead at Farnborough, in a gas-filled room. One was Eileen Woollard's mother, whom a detective-inspector had lately interviewed. The other was a foreign woman who had carried on business as a lady's hairdresser in Farnborough, and was understood to have studied medicine; there was reason to think that she knew of the dead girl's condition and was aware that she herself would be questioned by the police. The inquest upon these two women, both apparently troubled by financial anxieties, ended in a verdict of "suicide by coal-gas poisoning."

In concluding the Paddington inquest, Mr. Ingleby Oddie is reported to have described the case as a terrible tragedy "all arising out of this conspiracy to get rid of this girl's pregnancy, I am afraid by illegal means." "Everything seems to point," continued the coroner, "to this poor girl being subjected to criminal interference, with the result that she lost her life, her mother lost her life, and the Russian doctor lost her life. I have a pretty definite suspicion in my own mind as to what exactly took place; but, as it cannot be proved by direct evidence, and the circumstantial evidence is not sufficiently strong, the only course I can pursue with propriety is to record a verdict of 'death from septic abortion,' and leave the verdict open." No one will quarrel with Mr. Oddie's general observation: "So long as the law regards criminal abortion as a most serious felony, and regards the person who procures it and in procuring it causes death as being guilty of murder, so long is it the duty of a coroner to endeavour to find who was the person who performed an illegal operation in a case such as this."

PARIS

(FROM OUR OWN CORRESPONDENT)

CONTROL OF THE DANGEROUS LUNATIC

THOUGH the assassin of President Doumer has been beheaded on the assumption that he was responsible for his actions, this singularly tragic murder has focused attention on the problem of the lunatic who is a potential criminal. Psychiatrists, magistrates, and members of the legislative assemblies have conferred together and have decided on the creation of a Société de Prophylaxie Criminelle. It owes its birth to the initiative of Dr. Toulouse, medical director of the Henri Rousselle psychiatric hospital and president of the Ligue Nationale d'Hygiéne Mentale, and he has been elected president of the new society. It has appointed nine different committees. The subjects with which they will deal are: (1) Parliamentary action; (2) organisation of criminal prophylaxis; (3) penitentiaries, reports of experts, and criminal psychiatry; (4) penal reform; (5) criminal biotypology; (6) the delinquent child; (7) social factors in crime; (8) sex criminology; and (9) alcoholism and the toxicomanias. At the first meeting Dr. Toulouse pointed out that criminals, who are usually abnormals and psychopaths, are wont to attract the attention of those about them by premonitory symptoms, such as abuse and threats of violence. These symptoms may not warrant the intervention of the law, but in certain cases they ought to be reported to centres of mental prophylaxis or psychiatric services. Appropriate action could then be taken under existing legislative measures. But in order that preventive control can be more effective than heretofore, new legislation, after a thorough psychiatric and juridical study, is necessary. It would seem that Belgium has already taken action on these lines.

THE PUBLIC SWIMMING-BATHS OF PARIS

Certain cases of conjunctivitis, some quite severe, allegedly traced to swimming-baths, have led to their ventilation, metaphorically speaking, in the press. A municipal councillor has requested the

prefect of the Seine to answer certain specific questions with regard to the precautions taken to keep the water clean in the swimming-baths. In his reply the prefect has stated that the swimming-baths are fed either by water from artesian wells or by water which has been filtered and subjected to continuous chlorination. The walls of the swimming-baths are cleaned every morning with the help of electric aspirators, and every Monday the baths are emptied and cleaned. Samples of water are regularly taken by the authorities for analysis. The sanitary control of the Parisian swimming-baths thus seems to be satisfactory; and the officials can hardly be expected to catch the individual delinquent who, though he knows he is suffering from some infectious ailment, still insists on diluting his secretions and sharing them with his fellow-bathers.

B C G

B C G inoculation continues to hold the attention of the medical profession in France, where its merits have become, to a certain extent, a question of national honour. Accordingly, evidence throwing light on its value is being continuously collected with great assiduity. The latest report comes from Czechoslovakia, and is quoted by the *Presse Médicale*. After preliminary studies on animals, the State Institute of Hygiene in Czechoslovakia began in 1927 to prepare B C G, a sample of which was controlled in 1931 in Paris by Calmette, who found it to be identical with the Parisian B C G. Up to the end of 1931 a total of 2334 new-born infants had been vaccinated. With every supply of the vaccine sent to tuberculosis dispensaries, lying-in hospitals, and private practitioners, an elaborate questionary was sent. With its help it has been possible to follow the fate of 36·5 per cent. of the vaccinated infants up to the end of 1930. While the mortality among the controlled vaccinated infants was only 3·3 per cent., the general infantile mortality was as high as 14·6 per cent. It is, however, admitted that the vaccinated were as a class better cared for than the non-vaccinated.

IRELAND

(FROM OUR OWN CORRESPONDENT)

THE CORK MENTAL HOSPITAL DISPUTE

THE committee of the Cork Mental Hospital at its last meeting passed a resolution which must be almost unprecedented in the history of local authorities. The resolution proposed to fix the initial salary of the newly appointed resident medical superintendent at £450, instead of £750 at which the appointment was advertised. It may be remembered that when a vacancy occurred in the post the committee desired to promote its senior assistant medical officer, a man with long and excellent service in the institution. In order to do this, however, the approval of the Minister for Local Government and Public Health was requisite. The Minister refused such approval, and directed the committee to refer the appointment to the Appointments Commissioners for the recommendation of a candidate. The committee questioned the legality of the Minister's action in the courts of law, but their case failed. The matter was then referred to the Appointments Commissioners, and the salary fixed by the committee at £750 a year, rising by annual increments of £25 a year to a maximum of £900, was approved by the Minister, and the vacancy advertised on those terms. In due time the Appointments Commissioners recommended, and the committee appointed, a candidate other than the officer they had wished to promote. This is the ground recently put forward by the committee, the chairman and two other members dissenting, for altering the salary. Needless to say a contract cannot be broken so easily, and the Minister had already warned the committee that he would not sanction any variation of the salary. Notwithstanding this warning the committee passed the resolution. It is not likely that its action is a deliberate attempt of the committee to drive the new superintendent into resigning, though it is open to this interpretation. It is more likely to be a mere irresponsible expression of irritation at its wishes being over-ruled by the Minister.

MEDICAL DEFENCE UNION

Dr. W. S. A. Griffith presided at the 44th annual general meeting of the Union on Sept. 29th, when the report of the Council and the financial statement for 1931 were adopted. It was, he said, the second time he had occupied the chair after an interval of 30 years, during which the membership had increased fourfold. Of additional benefits granted to members in recent years he mentioned the following: (1) An indemnity insurance which provided unlimited cover in respect of damages or costs of the other side. (2) A reciprocal arrangement with the London and Counties Medical Protection Society by which one society will defend a member in an action brought against him as the result of the acts or omissions of an assistant who is a member of the other society. (3) A member of the Union is now defended against the acts or omissions of a bona-fide temporary locum tenens, a subordinate medical officer, or a non-medical assistant or subordinate in his proper sphere of work. (4) When a composite judgment is obtained for fees and costs, the fees due to a member are now regarded as the first claim on any payment received. (5) Any member who has paid 39 subscriptions may now compound for his future annual subscriptions by one payment of £1. (6) A member who employs an assistant not a member of either society may gain protection in actions brought against him by an additional annual subscription of 10*s*. During the last twelve months the Union, said Dr. Griffith, had defended an unusually large number of actions in the High Court; only in one case was a verdict given against a member. In the numerous allegations of negligence, raised against members in the county courts as a reason for not paying professional accounts, in not one instance was judgment given against a member of the Union. Defence against such allegations depended, he said, upon the evidence that can be placed before the court to rebut the allegation, and the prudent man should always have in mind the possibility of such allegations being made, and should avoid, as a matter of routine, any appearance of carelessness. The frequent employment of X ray and bacteriological examinations would constitute valuable evidence of painstaking and thoroughness. He stressed the imperative necessity of communicating without delay with the general secretary of the Union in all cases where complaints were made against a member. Many cases, he said, are prejudiced by unwise action taken before consulting him.

Sir Hamilton Ballance, Mr. F. C. Larkin, and Dr. E. Lewis Lilley, the retiring members of Council, were re-elected.

ST. LUKE'S MUNICIPAL HOSPITAL, BRADFORD.—In the operating theatre of this hospital white has been changed for green. The walls and windows are painted green, and the surgeons and nurses also wear that colour, on the ground that white strains the eyes and has a fatiguing effect.

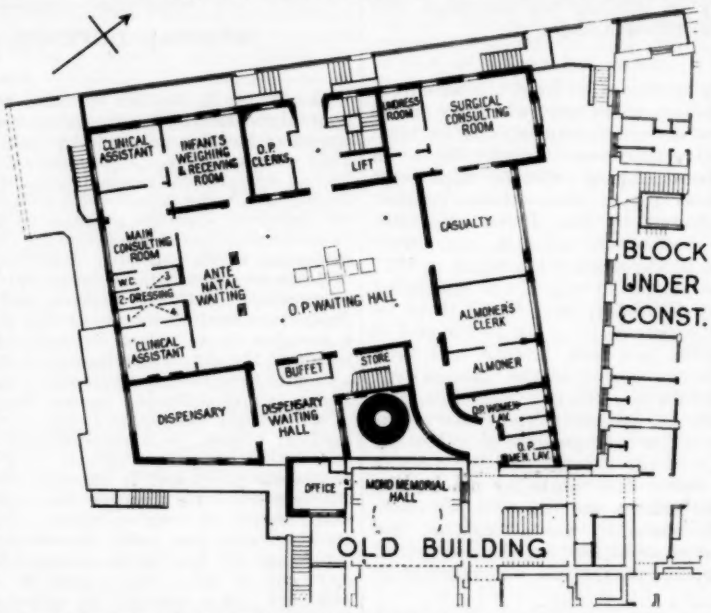
AN OUT-PATIENT DEPARTMENT FOR CHILDREN

ADDITIONS TO THE INFANTS HOSPITAL

ON Oct. 31st the new out-patient department of the Infants Hospital, Vincent-square, London, will be opened by the Princess Royal, president of the hospital. The department is the first part of the extension scheme to be completed; the scheme provides, in addition, for a new ward block for 76 patients, the reconstruction of the existing hospital, and the conversion of the old out-patient department into a new nurses' home. It was originally intended that the new out-patient department should make provision for ante-natal care of mothers, but owing to the economic depression, plans had to be curtailed. Apart from this omission the department has been equipped to meet the needs of the hospital, and the architect, Mr. C. Stanley Peach, has shown consideration for patients, doctors, and nurses alike in his design.

The patient's point of view.—Mothers arriving at the department can park perambulators, with reasonable safety, in an alley-way between the new building and a neighbouring row of houses. They enter on the ground-floor level, and wait in the out-patients' hall which occupies the centre of the building and is lighted from above by a glass roof. The hall is rubber-floored and automatically heated. At one corner the dispensary waiting-room opens out of it, and here a buffet is provided at which mothers can fortify themselves with tea and buns. Doors from the hall lead into consulting-rooms, the weighing-room and the almoner's office. A gallery runs round the hall at the level of the first floor, and from this open ear, nose and throat, and eye departments, X ray and massage rooms, a room for light treatment, another for plastering, and a fully equipped theatre in which minor operations can be performed, and next to which a large recovery room has been set apart. Patients therefore need make no excursions to distant parts of the hospital when examination in a special department is required. In the basement, entered by a separate door, is a small blue-tiled chapel and a waiting-room for relatives.

The medical staff's point of view.—Each consulting-room is supplied with an X ray view-box lighted from behind and a basin with running water; heating is by the ceiling panel system, and gas fires are built into the wall for use in emergency. The ground floor consulting-rooms receive zenith light from skylights made by setting the first storey back a little from the ground floor. In the operating theatre the same method of lighting has been followed; air entering the theatre is filtered through cheese-cloth stretched on wire frames which can easily be taken out and cleaned. On the top floor, at roof level, is a diet kitchen and milk laboratory, entirely cut off from the part of the building used by patients. Milk will be stored in a large refrigerated cupboard. The basement contains a series of cubicles in which children found to have infectious diseases can wait until the ambulance comes for them. Behind the chapel is a mortuary and a pathological laboratory where post-mortem examinations can be carried out. Bodies will be placed in a refrigerated chamber.



Ground-floor plan of the new block at the Infants Hospital, showing its relation to the old building and to the block still under construction.

The nurses' point of view.—An attempt has been made to avoid all unnecessary cleaning and polishing. The rubber or teak-block floors can be cleaned quickly with a mop; the door-handles are made of some sort of composition which actually defies cleaning. Even the stairs are slightly undercut to prevent dust collecting on their faces. A slight falling-off in this admirable principle may be observed in the brass hand-rail, but it is believed that constant use at the hands of the public will help to keep this burnished. Wire glass takes the place of railings on the stairs and round the central well. A special sloping slab is provided for the washing of napkins, and specimen napkins will be kept in small cupboards communicating by means of wire gauze with the outer air. The slats in the linen cupboards can be taken out and boiled; large heated cupboards are provided to warm blankets. All the doors are fitted with self-closing hinges and the walls are covered with cellulose paint.

General equipment.—The windows are made on a special design: the top and bottom panes are hinged along their upper and lower borders respectively, and open inwards to an angle of 45°. The central pane is divided into two lattices with vertical hinges. It is therefore possible to maintain ventilation by opening the top and bottom panes while avoiding any chance of being overlooked by closing the two central panes. A series of emergency batteries are being continuously charged and will come into action in case of failure of electric light power from the main. The equipment also includes water-softening, refrigerating, and ice-making apparatus. The new block communicates with the hospital on every floor, the passages entering the hospital between floors so that none of them are exactly on a level with the wards.

CORRESPONDENCE

SAFE MILK

To the Editor of THE LANCET

SIR,—In your issue of Sept. 24th (p. 707) Dr. Esther Carling raises the question as to what sort of milk the medical profession should recommend. The matter is of supreme importance, for the public is largely guided by the advice of its doctors, and yet few members of the medical profession seem to know the difference between the various designated milks. Your correspondent, after quoting certain figures—admittedly very disconcerting—showing the contamination of milk with tubercle bacilli, comes to the following conclusions: (*a*) there is no absolute safety anywhere; (*b*) ordinary mixed milk comes out better than Grade A; and (*c*) the more expensive type—Grade A (T.T.)—appears as rather less safe than pasteurised.

To the first conclusion I would reply that this is true of almost every foodstuff we consume, and does not apply only to milk. To the second, based on figures quoted from the investigations of Dr. Roodhouse Gloyne, I would remark that there is ample evidence to show that under proper control Grade A milk can be produced reasonably safe, and it seems possible that Dr. Gloyne's figures were based on too small a number of samples to be fully representative. The third assertion calls for comment. Dr. Gloyne is stated to have said that 3·8 per cent. of samples of Grade A (T.T.) milk were contaminated with tubercle bacilli, and the medical officer of health for Lewes questions whether such milk is free from risk for school-children. Now the chief medical officer of the Ministry of Health in his annual report for 1931 informs us that there were 195 Certified and 246 Grade A (T.T.) farms licensed that year. This gives a total of 441 farms where the cows are guaranteed to be free from tuberculosis. The number of samples of milk produced from these farms found to contain tubercle bacilli during the year was eight. As milk from each farm must have been examined many times during the period, the percentage of samples infected must thus have been much below the figure quoted. That even eight samples were found to be tuberculous is greatly to be deplored, and would appear to cast a reflection on the veterinary profession, which is responsible for testing the cows. In three of these cases cows known to have reacted to the test were kept on in the herd after they should have been rejected, and the contamination was thus due to breaches of the regulations and not to faulty testing; and yet in another case the licencee was purchasing ordinary milk from outside, contrary to the terms of his licence.

Under the regulations as they exist to-day a licence may be, and often is, given to a herd indicating its freedom from tuberculosis as the result of a single tuberculin test, provided always that any reacting cows have been removed from the herd. In already licensed herds new animals may be added after having passed one test only, even when they do not come from a tubercle-free herd. It is well known that cattle in the early incubative stages of the disease may fail to react to the test, and it is always possible that such animals may become infective before the next general prescribed test of the herd is carried out; and yet the veterinary surgeon who tests has no power to prevent the inclusion of such animals in the herd. Another danger which is frequently responsible for tuberculous cattle being found in so-called free herds is that there is no compulsory standardisation of tuberculin, and any brand may be used. The chief medical officer in his report above quoted makes the following statement:

> "No less than 16 different brands of tuberculin have been used in tests carried out under the regulations laid down by the Milk (Special Designations) Order, and about many of these no information is available as to their potency or reliability."

The veterinary profession has long been agitating for compulsory standardisation of tuberculin and that it should be made illegal to use any tuberculin not certified to be so standardised. It has approached the Government on more than one occasion to bring in legislation for this purpose, but so far without success.

Other alterations of the Order, which, in the opinion of our profession, would give a greater security against accidental infections, are also called for. It is felt by many, including medical officers of health, that if more use were made of the veterinary profession in the control of the milk-supply, and if a regular veterinary inspection of all milk-producing cows were made obligatory, the incidence of tuberculosis in milk would be materially lessened. This has been proved over and over again in the boroughs and the few county districts where veterinary staffs are so employed. The final goal must, however, be the eradication of bovine tuberculosis from our herds, and a scheme for attempting this colossal task has already been drawn up by the National Veterinary Medical Association of Great Britain and Ireland.

I am, Sir, yours faithfully,

D. S. RABAGLIATI,
Chief Veterinary Officer, West Riding of Yorkshire County Council.

Oct. 3rd, 1932.

To the Editor of THE LANCET

SIR,—Referring to the menace of the transference of bovine tuberculosis by cow's milk to humans, Dr. Carling states that "it would appear that there is no absolute safety anywhere." While this reference is true in relation to liquid milk, may I point out that a degree of protection, which for all practical purposes may be regarded as absolute, is obtained by the use of milk powder prepared by the improved Just-Hatmaker roller process. When this process is carried out under scientific supervision and control, the bacterial count per cubic centimetre is very low, usually under a maximum of 150, and the remaining flora are of no pathogenic significance. This protection against bovine tuberculosis is achieved without deterioration of vital properties, the loss of vitamin value, if any, being negligible, and this conclusion, drawn from biochemical feeding experiments on animals,* is generally confirmed by the experience of medical officers of health and pædiatricians in charge of infant welfare centres and the infant departments of hospitals.

As to the query raised about the safety of Grade A (T.T.) Milk for school-children, it is interesting to note that in recent years roller milk powder, flavoured with chocolate and sweetened with sugar is being used in hundreds of schools as the morning milk ration. This form of chocolate milk not only gives protection against infection, but is much cheaper than Grade A (T.T.) liquid milk, and is in a form to be conveniently served hot to the children during the winter season. In this relation also reconstituted roller milk powder has the advantage of giving a

* References: (1) Hess and Unger: Jour. of Biochemistry, 1919, xxxviii., 293. (2) Carleton Ellis and Annie Macleod: Vital Factors of Food, Vitamins, and Nutrition. New York. 1922. (3) Evans and Burr: Californian Univ. Memo., viii., p. 176. (4) Sherman and Smith: The Vitamins, 1931.

pin-head flocculent rennin curd in contradistinction to the solid curd of liquid milk, a property of great physiological importance in relation to mid-morning peptic digestion.

If properly prepared milk powders were universally adopted in lieu of liquid milk for infant and child dietary, the danger of milk-borne disease would be practically eliminated.

I am, Sir, yours faithfully,

Dulwich, Oct. 3rd, 1932. JOHN CAMPBELL, Ph.D.

ACUTE RETROPHARYNGEAL ABSCESS

To the Editor of THE LANCET

SIR,—Amongst the cases of acute pharyngeal abscess recorded in your last issue by Mr. N. Asherson is one in which the mistaken diagnosis of diphtheria was made. From an experience of 36 years' residence in fever hospitals I should say that this error is not uncommon. It is one which has long been recognised. The only clinical lecture I heard Dr. Hilton Fagge deliver—unfortunately he was soon afterwards laid aside by illness from hospital work—nearly fifty years ago, was on "croup," and I remember that he warned us that a post-pharyngeal abscess might give rise to symptoms of laryngeal obstruction and so be mistaken for diphtheria; (see also Fagge's "Principles and Practice of Medicine," 1st ed., 1886, i., 801). In these cases, as was found in Mr. Asherson's sixth case, the abscess is usually situated rather low down, but it can often be detected by digital exploration, a procedure which should never be neglected in cases of "croup" in which there is no exudate on the fauces or Koplik's spots in the mouth.

I am, Sir, yours faithfully,

Hampstead, Oct. 2nd, 1932. E. W. GOODALL.

To the Editor of THE LANCET

SIR,—Referring to Mr. N. Asherson's most interesting article in your last issue, may I recall an article which I published in your columns [1] 30 years ago containing an account of 17 cases. One of these patients was 3 years old, two were 2 years old, the rest were under 2. I think this age-incidence should be emphasised. The prognosis of the complaint is bad chiefly because its diagnosis is missed. Most of these patients do not have the good fortune to come into the hands of a laryngologist. In any case examination by laryngoscope is no easy matter in an infant and usually if the possibility of this complaint is appreciated in infants, and its symptomatology is recognised, laryngoscopic examination is not necessary for its diagnosis. As Mr. Asherson has pointed out, the disease may simulate laryngeal diphtheria. This possibility should have greater emphasis laid upon it. I hesitate nowadays to give an opinion as to the best route for opening the abscess, but seven infants on whom I operated through an external incision in the neck behind the posterior edge of the sternomastoid did well. This constituted all except one of the patients I treated personally. The one patient of my own series who died had Klebs-Löffler infection and acute broncho-pneumonia. The retropharyngeal swelling was a mere complication of these other conditions. From recollection I should say I did not find the operation difficult. There is this further point: that in infancy the most dangerous complication always to be feared is broncho-pneumonia.

I am, Sir, yours faithfully,

Mundesley, Oct. 3rd, 1932. S. VERE PEARSON.

[1] THE LANCET, 1901, ii., 1117.

PATHOGENESIS OF CAVITIES IN THE LUNGS

To the Editor of THE LANCET

SIR,—Most physicians and radiologists who have studied the subject now agree that annular shadows represent air-spaces in the lung, but I doubt whether they would agree with Dr. Macfie and Dr. Alexander that tubercle bacilli are always found in the sputum in such cases, or that annular shadows are always accompanied by shadows representing extensive tuberculosis in the lung. If extensive disease is present one cannot assume that the bacilli are derived from the structure represented by the annular shadow. Clinical and radiological observations suggest that there are two types of pulmonary cavities, one the well known, more or less chronic ulcerated cavity, usually loculated, the other a more or less recent spherical space represented by the typical annular shadow. In addition there may be intermediate forms. It seems to me probable that the second type consists of cavities opening out from a constricted bronchiole, or perhaps from one in which a valve has formed, and that these cavities are often distended by air under pressure.

Dr. Mitchell's theory that air passes through a perforation in a bronchus and forms an air-cyst in the interstitial tissues is a most ingenious one, and it accounts for most of the facts, but I would have expected the cyst to be mushroom-shaped or multiple rather than spherical and single. Dr. Morland's explanation of the way in which a high pressure could be produced in a cavity is, I think, reasonable, provided that the existence of a valve is granted. But one must be careful in arguing that the pressure produced during coughing can distend cavities, for that pressure, caused by contraction of the thorax, is exerted also on the surrounding lung tissue. I would suggest that the pressure exerted by the *other side of the chest* should be taken into consideration. The pressure on the sound side during coughing might well be higher than that on the affected side. Such an excess of pressure would be transmitted to the air in the bronchi of the affected side sooner than to the air-spaces (alveoli, &c.), and therefore might distend a commencing cavity. Repeated distensions, however small, would thus produce in the end a definite cavity even when no valve was present.

Personally I believe that the higher pressure produced by the opposite side of the thorax is the only reasonable explanation so far suggested which will account for certain puzzling phenomena such as the protrusion of the lung through a wound in the chest wall, and the occurrence of a high pressure in the (valvular) spontaneous pneumothorax.

I am, Sir, yours faithfully,

Harley-street, W., Oct. 1st, 1932. G. T. HEBERT.

To the Editor of THE LANCET

SIR,—In Dr. Sowerbutts's interesting case report the hypothesis is repeated that these shadows are due to air-cysts in the lung, but surely the evidence in support is not convincing. For (1) air escaping to the interstitial lung tissue would spread along the planes of least resistance, as does surgical emphysema. (2) Surgical emphysema of the lungs may be discovered at autopsy, and these air-cysts are not. (3) Large emphysematous bullæ are also readily detected at autopsy; even if collapsed the wall remains. (4) These annular shadows without any signs of cavity formation may persist for years with slight alterations and it is inconceivable that an air-cyst would so persist. From the moment of formation it would

commence to absorb. (5) Under artificial pneumothorax treatment these shadows appear to form areas which do not readily collapse, indicating that at that point the pleura is adherent.

It would be idle to deny the possibility of more than one cause for such a radiographic appearance, but to me a pleural origin seems most in accord with the observed facts.—I am, Sir, yours faithfully,

Paignton, Oct. 4th, 1932. ERNEST WARD.

RESPIRATORY EFFICIENCY TEST

To the Editor of THE LANCET

SIR,—The considerable interest aroused by the recent observations of Dr. R. A. Young on the need for the measurement of respiratory efficiency and by the report of Dr. Alan Moncrieff who, in your issue of Sept. 24th, describes the results of a series of such tests on "the hospital population," requires, in view of this interest, a more strictly accurate representation of the views of Flack than has been given and generally assumed in Dr. Moncrieff's account. Flack, in the Milroy Lectures referred to, did not intend that the standards of efficiency as adopted by the Royal Air Force should be applied to the general civilian community. Instead, from a series of researches which included the study of a group of pilots who were stressed, unfit, and suffering from "breakdown in the bodily system" from various causes, he merely observed that "a similar condition of bodily inefficiency may be found among individuals who are deemed more or less normal members of the community." Surely this is not, as Dr. Moncrieff suggests, an "unjustifiable generalisation." The fact that evidence of similar inefficiency is discovered among the more or less normal patients attending Middlesex Hospital should come not as a surprise in terms of Air Force standards, but as a clear proof of Flack's contention.

Nevertheless, to those who have been long conversant with the work of Flack and more particularly concerned with the application of his tests, the report of Dr. Moncrieff's investigation has a refreshing appeal; but it must be remembered that these tests are too subjective in nature to give comparable results unless conducted under strictly standard conditions. Apart from a discussion of relative unfitness, one might offer this suggestion, that by retaining the principles, and by a modification of methods, Dr. Moncrieff might still find in these tests a solution to the clinical problems he had in view. I am, Sir, yours faithfully,

H. W. CORNER, M.D.

Wimpole-street, W., Oct. 1st, 1932.

To the Editor of THE LANCET

SIR,—Dr. Moncrieff conveys the impression that the expiratory force and 40 mm. Hg tests are the main, if not the only, methods employed by the Royal Air Force to estimate respiratory efficiency. This is far from being the case. The vital capacity, calculated from height, weight, and chest measurements, and the breath-holding test, are at least of equal, if not greater, value as a gauge of respiratory efficiency than the test he quotes. Of the four tests connected with the estimation of respiratory efficiency, the expiratory force is probably of the least value, while the 40 mm. test is of more value in demonstrating the coördination between the cardiovascular and respiratory systems under stress than it has as a purely respiratory test.

It is unreasonable to expect that good results could be obtained from any efficiency tests without wholehearted coöperation of the subject concerned, especially in those requiring concentrated maximal effort to perform. For this reason I agree that the results obtained from out-patients cannot be satisfactorily compared with those obtained from Royal Air Force personnel. The essential purpose of the Royal Air Force efficiency tests is not directed so much towards gauging disordered function as towards the estimation of the relative degrees of efficiency among normal, healthy young adults. The average age of Dr. Moncrieff's cases was about 40—the limits being 17 to 70. Respiratory efficiency tests in general, such as those mentioned, are not applicable to elderly persons. The vital capacity may be quoted as a case in point. Calculated vital capacity from height, weight, and chest measurement as laid down in Air Publication 130, can only be applied up to the age of about 30, as increased weight and chest measurement occurring with increasing years would require a higher standard of vital capacity in an individual at 50 than at 20—which is absurd.

The tests employed by Dr. Moncrieff have never been considered applicable to severe cases of disordered respiratory function and might be dangerous if applied in this connexion; it is probable that in such cases a careful clinical examination in experienced hands is likely to prove of greater value than any of the existing tests of respiratory efficiency.

I am, Sir, yours faithfully,

H. A. TREADGOLD,
Consultant in Medicine, R.A.F.

Central Medical Establishment, Royal Air Force, Clement's Inn, W.C., Oct. 3rd, 1932.

GASTRIC ACIDITY

To the Editor of THE LANCET

SIR,—In a series of articles on gastric acidity this year you have repeatedly drawn attention to recent investigations showing an intimate relation between the acid-base balance in the blood and the secretion of acid in the gastric juice; but you appear to be using these observations to support some new conception of gastric pathology. I admit I do not know what this new doctrine is; I do not always understand what you mean by "gastric acidity," and at times I am left with a haunting doubt as to whether you are clearly distinguishing between gastric juice and gastric contents; in one place in your first article (THE LANCET, 1932, i., 29) by a slip of the pen you definitely write gastric juice when you mean gastric contents. In the last article (August 13th, p. 352), however, you clearly invite us to believe that the acidity of the gastric contents is of little, if any, importance in the production of gastric symptoms. I cannot myself accept this invitation, but what puzzles me is where you find any connexion between these remarks in the opening paragraph and the very interesting experiments of Browne and Vineberg, which you discuss in the rest of your article. These experiments are entirely concerned with the control of the gastric secretion by alterations in the acid-base balance in the blood; but variations in gastric secretion have nothing whatever to do with the quite distinct problem of the effects produced in the stomach by variations in the acidity of the gastric contents. Although this point is really very obvious, it is frequently missed by those who write on gastric pathology. I do agree with your conclusion that we need a wide outlook, but I do not get on very fast if, keeping my eyes on the horizon, I stumble over the obstacles that lie at my feet. Will you help me by

going back to that matter of the production of gastric symptoms with which you started, and explain how changes in the acid-base balance in the blood can play any part therein, if by hypothesis we deny any importance to changes in gastric acidity?

If, indeed, in the treatment of peptic ulcer, oral administration of alkalis should have to be replaced by intravenous or subcutaneous injections, a prospect that you seem to regard rather light-heartedly, it will surely and rightly be hailed by the surgeons as the last nail in the coffin of the medical treatment of that condition.—I am, Sir, yours faithfully,

G. W. GOODHART.

Group Laboratory, Archway Hospital, N., Sept. 24th, 1932.

*** Our object in drawing attention to experimental work on the acid-base balance in the blood and the secretion of hydrochloric acid into the stomach was to point out that the secretion of HCl did not depend solely upon local changes in the stomach itself. It was not suggested that variations in acidity brought about by changes in the blood led to "gastric symptoms"; the intention was rather to indicate that the degree of acidity alone does not fully explain the symptoms of indigestion. Extremes are compatible with perfect health, and the investigations quoted do not suggest that symptoms are produced by changes in the plasma bicarbonate. It was not suggested that oral administration of alkalis in the treatment of peptic ulcer should be replaced by intravenous injections, and Balint's interesting observations were cited merely to show that the exact significance of gastric acidity in this disease is as yet far from fully understood and that experimental work bearing on it should not pass unnoticed. It is known for instance that, in cases of ulcer, gastric acidity may be higher after alkali treatment and cessation of symptoms than it was when symptoms were present, also that a high or low acidity may be found during the active stage without relation to the severity of the symptoms. —ED. L.

ERRATUM.—Dr. V. Rendall writes: "In a paper on Diathermy and Constipation, published in THE LANCET on August 6th last, an unlucky misprint occurs. In the comment on Case 5 the first six lines were a quotation from the findings at the New Lodge Clinic, while the last five lines were my observations. The quotation marks should have been placed, of course, at the end of the first six lines, and not at the end of the paragraph, and I regret the oversight which Dr. Hurst properly resents."

PUBLIC HEALTH SERVICES

Suggested Economies at Plymouth

THE Plymouth City Council recently appointed a special committee of inquiry into public health administration, and this committee has now issued a report recommending measures which will save more than £6000 a year. Plymouth employs 547 persons in its public health service, and the committee considers that several institutions are overstaffed. It suggests that one of the total staff to 1·6 patients is adequate in the Swilly Hospital for infectious disease, where the matron has a waiting-list of nurses who could be called upon in an epidemic. At Lee Mill small-pox hospital, at present quite unoccupied, there seems no reason to supply the caretaker and his wife with an assistant who is paid £120 a year. A consignment of beds and bedding for this institution is lying there unpacked, and the committee advises that it be taken into use elsewhere. At the City Hospital the staff ratio is 1 to 2·1 patients. For 456 patients in 17 wards the committee found 4 medical officers, 8 consultants, 134 nurses, a dispenser, a radiographer, a masseuse, and 103 others, and considers this excessive; the medical superintendent, however, declared that the place was under- rather than overstaffed. The average cost per patient per week was £2 5*s.* 5½*d.*; in the absence of figures from other institutions for comparison, the committee made no recommendation, but pointed out that at this hospital about 100 beds were usually vacant, while at the South Devon and East Cornwall (voluntary) Hospital there is a waiting-list of over 200; this led them to the view that more coördination between the voluntary and municipal undertakings, and avoidance of unnecessary duplication of plant and appliances were required. £600 a year could, it was held, be saved by appointing junior medical officers annually instead of permanent medical officers at £350 a year. The committee also advised the reinstitution of the pay-bed system, patients in these beds being attended by their private practitioners.

Considerable economy has already been effected by using ordinary raw milk for cooking purposes. Hitherto Grade A (T.T.) has been used at Didworthy Sanatorium, Swilly, and the City Hospital. At the City Hospital the saving effected by the change was £650, and at Swilly £156 per annum. The average weekly maintenance cost at Didworthy, 52*s.* 2·8*d.*, is 9*s.* 5*d.* per week per patient above the average for such institutions. Here, again, reduction in staff is recommended—to a total staff of 25—and also reduction in the emoluments of some of the staff, a total economy of £1500 being held to be possible. The committee also strongly recommended that the new Mount Gold orthopædic hospital should only be staffed and equipped for one-half of its capacity, since not more than 50 patients belonging to the city were suitable for admission.

A saving of £1627 is suggested on the maternity and child welfare service, as the committee came to the conclusion that there was considerable overlapping with the voluntary organisations. It recommends the dismissal of one medical officer, four health visitors, one assistant investigation officer, and one clerk, and the abandonment of a proposed sixth centre. Since 1925 the staff has been increased by two medical officers, three health visitors, and a clerk, and the annual cost has risen from £5225 to £13,349. There are 18 sanitary inspectors, and the committee recommends that the number be reduced to 15, a saving of £1050 per annum, by letting vacancies remain unfilled when they occur. The town hall staff of ten should also, it thinks, be reviewed.

The committee emphasises the fact that its investigations have been by no means exhaustive and could profitably be continued. Its report is signed by four of the five members, and the fifth presents a minority report suggesting that the economies proposed are apparent rather than real, and will only shift the expense from one department to another. He disagrees with practically all the specific proposals made.

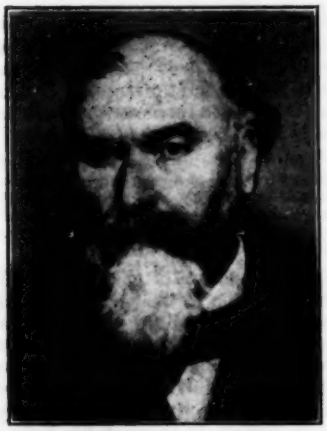
When the report was submitted to the Plymouth City Council the Labour members protested, and expressed unwillingness to accept any reductions in expenditure on public health. After prolonged discussion, both reports were referred to the Public Health and Maternity and Child Welfare Committees.

OBITUARY

WILLIAM STIRLING, M.D., D.Sc. Edin., LL.D. Glasg.

Prof. Stirling's death on Oct. 1st at his home in Victoria Park, Manchester, ends a long life of prodigious activity in the service of medicine.

William Stirling was the son of Francis Stirling and Isabella Crawford, of Grangemouth, Stirlingshire, where he was born in January, 1851, and naturally he was educated at the Dollar Academy, going on to Edinburgh University where he graduated in science in 1870 and in medicine in 1875, each time with first-class honours. He took all the scholarships and prizes for which he was eligible, and at the same time made mental notes of the habits and peculiarities of his teachers, a faculty which revealed his bent as a student of men. Among the teachers under whose influence he came, as he himself has told us, was J. H. Balfour, the dryness of whose teaching earned him the world-wide synonym of "woody fibre"; G. J. Allman, a congenial Irishman, whose knowledge and appreciation of invertebrate fauna led him to tell of the amœba "with its sad and doleful cry" and its ill-equipped digestive arrangements; Lyon Playfair, a pupil and friend of Liebig, who with the help of James Dewar introduced the student to the chemistry of foods and dietaries; William Turner, bold, decisive, precise, and superbly audible as a lecturer and a prince of demonstrators; J. Hughes Bennett, like a modern Justinian, laying down the law in his institutes of medicine, and furious with Virchow who had dared to substitute leukæmia for his own term leucocythæmia; James Spence, an excellent operator and careful surgeon but not an inspiring speaker, whose dissections of the injected blood-vessels of the foot still bear witness to his manipulative skill; Robert Christison, whose course of 100 lectures carried his hearers from Tinevelly senna to inunction of the thyroid by a mercurial salve, and his own imminent death from swallowing calabar bean averted only by the immediate swallowing of his shaving-water; Douglas Maclagan, the bard of the medical faculty, who combined medical jurisprudence and the teaching of public health; W. R. Sanders, whose teaching of pathology was largely pathological anatomy, Paget at home and Rokitansky in Vienna being names to conjure with; the erudite Thomas Laycock, who gave daily disquisitions on "omitted chapters" in medicine with a style all his own. J. Y. Simpson had already reached his zenith and was stricken with angina pectoris; his nephew, Alexander, who followed him, treating his subject balanced by the physiology and pathology of the modern German school. On the clinical side Bennett, with his didactic and precise method of examining patients at the bedside whatever the alleged diagnosis; "where do you feel pain?" was the first and invariable question, and woe to the student who omitted it. James Syme, of wonderful dexterity, whose lessons taught so pithily and forcibly by demonstrations were never forgotten; and finally, Joseph Lister, transferred from Glasgow to succeed his father-in-law, who applied modern physiology and pathology to the infant bacteriology, and who demonstrated to astonished fourth-year students the blood clot lying in a compound fracture without becoming septic.



PROF. STIRLING

These were Stirling's teachers at Edinburgh, and we draw on his own reminiscences to describe them. Later he went to work with Karl Ludwig at Leipzig and Ranvier in Paris, returning to demonstrate for W. Rutherford at Edinburgh until in 1877 he was appointed to the chair of the institutes of medicine at Aberdeen. Nine years later, on the retirement of Arthur Gamgee, he was called to Owens College, Manchester, as Brackenbury professor of physiology and histology, and for 33 years he represented physiology at the College and the University. It was largely owing to his energy that the great block of laboratories arose as an annex to the medical school. As dean of the faculty of medicine from 1902–13, his administrative ability found full scope. So successful was he as organiser and teacher that it is rather in these capacities than for original work that Stirling will be remembered. He possessed a commanding figure and personality which impressed his students, both at lectures and in the laboratory, and he knew their needs. Before his transference to Manchester he had translated Leonhard Landois's text-book of human physiology, with so many emendations and additions that it became in his hands largely a new work. The book was unique in its attention to the practical bearings of physiology on medicine and surgery, making it possible for the student on entering the wards of the hospital to understand disease as a modification and perversion of normal processes. This result was actually achieved by Stirling in the early years of his professorship, and a large share of the success of the medical school of that epoch may be rightly allotted to Stirling's groundwork, none the less effective in that his teaching was frank at times almost to the degree of coarseness. A few years after reaching Manchester he brought out two smaller manuals, one on practical histology, the other covering chemical and experimental physiology, which became the guides of students in many medical schools. Stirling was happy in his publisher, Charles Griffin and Co., who were lavish in allotment of space and illustrations. His other important writing was a later study, entitled "Some Apostles of Physiology," in which he set out their contributions to the advancement of the healing art as well as to the prevention of disease. His knowledge of his colleagues was world-wide, for he visited every international physiological congress and had first-hand knowledge of nearly all the continental schools. Stirling retired from the chair of physiology in 1919, but continued to make use of his vast store of information in papers of historical character and other ways.

So completely indeed had he retired that few of the present generation of students knew him. One of his old students writes: "While Stirling did not perhaps go as far in research as was expected of him, he did much in coördinating our knowledge and

was without rival as a teacher. The pains he took to illustrate his teaching by lantern and microscope slides was beyond all praise. As a popular lecturer too in subjects relating to medicine he was in great request. His lecture to the British Association in 1915 on curiosities and defects of sight, illustrated by a booklet full of pictures, may be mentioned as an instance of his extraordinary thoroughness. He was lavish both in money and in time when he had agreed to give a lecture. His book on Apostles of Physiology, written in coöperation with Walter Whitehead, is now a treasure for the booklover."

Prof. Stirling married Elisabeth Ferguson Crawford and leaves two daughters and two sons, one of whom is registrar to the Advocate-general, the other a leading consultant in ophthalmology in Manchester. The photograph which we reproduce appeared on the cover of a popular lecture given a few years ago. He had no studio portrait taken but there are many excellent contemporary caricatures of the impression he gave as a teacher, the best being one entitled "A Vacation Nightmare" done by Mr. H. T. Lamb, the war artist, when he was a medical student.

PANEL AND CONTRACT PRACTICE

Approved Society Surpluses

AT the twentieth annual conference of the Scottish Association of Insurance Committees, Mr. John Hill, president, dealt with the anomalies of the third valuation. This was, he said, expected to be a critical valuation. The enormous surpluses of the first and the large surpluses of the second valuation were not anticipated. The forecast had again been more or less falsified; for some societies have large surpluses and others small or none at all. Mr. Hill suggested that the segregation of large numbers of insured persons engaged in hazardous occupations to a society of their own had thrown an almost impossible burden upon those societies, and that the other societies were relieved of liabilities that might well have been theirs to share. They knew of well-known societies that, with increasing sickness and serious loss of contribution income, were going to experience desperate times to make ends meet. He did not advocate pooling of all surpluses. But did anyone think there could be a continuance within the Insurance Acts of societies with surplus money they did not know what to do with and, on the other hand, societies at their wits' end to know how to keep solvent? A continuance of these conditions spelt disaster. He was prepared, he said, to take 50 per cent. of all surpluses, and with the funds provided he would first of all make dental benefit statutory. He would cut out all other extra benefits and establish what to his mind was the most urgent need of the insured person—namely, a specialist and consultant service, together with up-to-date diagnostic facilities for the panel practitioner and his patients. The remainder of the fund he would conserve to provide a safeguard to every insured person that their benefits under the Act were sure. What they looked upon as abnormal sickness experience was probably going to be the normal experience for many years to come.

Miss Ritson, controller of insurance for the department of health, pointed out that, according to the International Labour Office, the difficulties in Scotland were common to most countries—lowered contribution income, unemployment, high sickness and disablement rates. As to contributions, there was still in Scotland a very considerable residual burden. The greatest fear, however, was that the sickness and disablement claims were rising. That year they had experienced in Scotland a rise that was frankly disconcerting. The situation in 1932 promised not to be so good as in 1931 and 1930. In Glasgow there had been a 5 per cent. rise in the number of illnesses over 1931. They could not relax their efforts if the new N.H.I. Act was to bring prosperity. A very special responsibility fell on medical practitioners for granting prescriptions and certificates. The causes of heavy incidence in certification would have to be probed, especially as that heavy incidence appeared to be peculiar to certain practices.

Chemists' Remuneration

There has been some evidence of determination on the part of panel chemists to insist that the clause in their agreement, which the Minister of Health wishes to remove in the 1933 contracts, shall be retained. The clause is as follows:

> A chemist shall not give promise or offer to any person any gift or reward (whether by way of a share of or dividend on the profits of the business or by way of discount or rebate or otherwise) as an inducement to or in consideration of his presenting an order for drugs or appliances on a prescription form provided by an insurance committee.

Retail chemists think the removal of this clause will be detrimental to the efficiency of the dispensing service, and that prescriptions would be dispensed on a commercial rather than professional basis as a result of its deletion. The opinion of coöperative societies, which feel themselves to be attacked by the presence of this clause in their contract, is that they should have the right to dispose of their profits in any way they choose without outside control. A conference, representing 12,000 chemists under contract for insurance dispensing, held in London on Sept. 28th, accepted the financial terms offered by the Ministry, provided that the clause in question is retained. Failing agreement they ask for the matter to be submitted to independent arbitration.

Compensation for an Eye

It was pointed out in these columns recently (p. 705) that a workman is not necessarily entitled to compensation from his employer simply because he has lost an eye during the course of his employment. The Council of British Ophthalmologists, in a report on compensations for eye injuries, state they are of opinion that the Workmen's Compensation Acts should be amended in such a way as to secure to the injured workman, in addition to the benefits at present allowed in respect of loss of earning power, a lump-sum payment to compensate for permanent loss of function and/or disfigurement. The report adds that this principle is already embodied in certain schemes operated by private firms in this country and the principle of lump-sum payments for partial or total loss of vision and other ocular disabilities was recognised in the regulations for the granting of war pensions. It was thought this would result in less delay in settlement of claims, less subsequent demoralisation with deterioration of eyesight and health, and also less litigation.

Practitioners' Names

A circular letter from the Ministry of Health calls attention to the difficulty sometimes experienced by regional medical officers in their inspection of medical records, owing to the inaccuracy of the names on the

envelopes. In most instances the difficulty has arisen in dealing with the records of a practice in which one practitioner has succeeded another, or a change has been made in the partners of a firm. It is obviously desirable that the regional medical staff should be able readily to identify the name of the practitioner who is in fact responsible for keeping the records, and the Ministry has asked insurance committees to take steps to ensure that all records bear the correct particulars.

Hypnotism in the Treatment of Asthma

An insurance practitioner who performs a service which he considers outside the scope of medical benefit as defined in the terms of service may charge the insured person for the service if within seven days he notifies the insurance committee on form G.P. 45 whether it was "urgent" (this term has recently been altered to "an emergency") and gives proof that he did possess special skill beyond that ordinarily possessed by a general practitioner. The charge is allowed to stand if the insurance and local medical committees agree that everything is in order. In a case which came up at Manchester recently the details of the "operation" given were:

1. Patient has for years suffered from asthma which has lately become intolerable.
2. Suggestion under hypnotism, for which Mr. E is a suitable case, being extremely susceptible to hypnotism.
3. Not urgent, but it is performed in desperation as all the usual remedies have failed in his case.

The local medical committee stated that in their opinion the "operation" was not within the scope of an insurance practitioner's obligation, and that the practitioner did possess the necessary skill. This case is similar to the London cases, in which psychotherapy was used to cure a painful neck and some other neurosis, and which are awaiting the result of appeal to the Ministry. The London local medical committee (with some dissentients) decided that the service was beyond the scope of medical benefit, the London insurance committee disagreed and decided to get a Ministerial ruling; in Manchester however both committees agreed on the point, so that unless the Ministry upsets this decision hypnotism for the treatment of asthma may be charged for when treating an insured person.

Certification without Seeing the Patient

Another medical service case heard at Manchester raises the question of procedure when complaints are received against insurance doctors.

A communication dated June 7th was received from an insured person in which he stated he was under domiciliary treatment and had been under his doctor for 18 years, but that he was last visited on April 22nd and since then his doctor had been taken ill and had not visited him; also that his daughter had attended at the doctor's surgery every week for his certificates which had been given without the doctor seeing him, and he asked what was the best course to take. The clerk to the insurance committee reported that a copy of this communication was taken to the doctor by an officer of the committee with a letter pointing out that it was important the patient should receive medical attendance from him personally or by deputy without further delay, and the doctor was found to be confined to his bedroom and unable to visit the patient that day, but he promised to visit him on the following afternoon and said that in his opinion the patient could not have urgently required attention. The patient was also visited and was told that the doctor would visit him on the following day, and upon the man expressing his desire to transfer to another doctor he was informed that he had a card which enabled him to do so immediately, and the procedure for change of doctor was explained. The doctor's reply to the committee's request for his observations upon the patient's statements was also submitted, in which he stated that sickness of a severe nature had completely disabled him for some time, but that from the experience gained during the 18 years the patient had been under his care he was of opinion that visiting was unnecessary, but he regretted that his deputy had not been instructed to visit the case and gave an assurance that a repetition would be avoided. A copy of the doctor's statements was sent to the patient with an inquiry if his letter was intended to be a complaint for investigation by the medical service subcommittee, but no reply had been received to this letter nor to a further communication which had been sent, and he had not transferred to another doctor. A resolution was adopted that the correspondence submitted should be referred to the chairman, vice-chairman, and two medical members of the committee, with power to deal therewith.

Here the chief offence lay in the giving of certificates without seeing the patient. There was a somewhat striking case of a similar nature some little time ago in London, where the doctor gave certificates of incapacity, dating several of these back, and it was eventually proved that at the time the certificates of incapacity were given the insured person was in Wormwood Scrubs for some criminal offence, although the doctor thought he was still in the hospital to which he had been sent. The usual procedure in such cases is to write to the doctor and ask his observation on the statements, and in most cases to require attendance of the doctor and complainant, who in certification cases is often the representative of the approved society, before the medical service subcommittee, who then hear the evidence and decide on the penalty. The hearing may last an hour, to say nothing of time taken in getting to and from the place of hearing, and there is often for the doctor the mental agony of the unknown procedure, "What will they say? . . What will they do?" It is an irksome and invidious procedure for a doctor who has quite honestly, although against regulations, tried to assist the insured person to get his sickness benefit. The doctor is met with "I shall not have anything to live on if I don't get my certificate," or "I forgot to ask the hospital doctor, so as you know he is in hospital will you give me a certificate," or "The agent wants a certificate, and said I was to ask his doctor for one." Out of the kindness of his heart and forgetting the wording *I have examined you on the undermentioned date*, he gives a certificate, which is in effect a cheque on the approved society, and breaks the regulation. On discovery the above procedure then usually begins. Manchester however appears to have adopted the unusual but much more humane course of sending an officer to interview both doctor and patient, to both of whom the position is carefully explained, and eventually the chairman, vice-chairman, and two medical members of the committee deal with the matter. The doctor is put wise without wasting his time and being made to feel like a naughty boy. The patient gets what he wants, namely, a change of doctor, and all is settled without ill-feeling on either side. No doubt for the bad case there should be some sterner method. The whole question of procedure at medical service cases is likely to come up at the annual conference of insurance committees to be held next week at Buxton.

QUEEN MARY'S HOSPITAL, ROEHAMPTON.—The annual report of this hospital for sailors, soldiers, and airmen who lost limbs in the late war, which has now completed its seventeenth year, contains a review of the work done during its existence. Of slightly more than 41,000 men who lost limbs in the war, 24,427 were admitted up to June 30th last for the supply of their first limb, and in many cases also for their second. There have been 35,983 attendances for repairs and renewals, and 103,919 cases have been dealt with through the post. The London County Council is now sending civilian cases from hospitals under its control on conditions similar to those on which cases from the railway companies and other public bodies are admitted.

MEDICAL NEWS

HOSPITAL DINNERS

St. Mary's Hospital

Sir Joseph Skevington, senior surgeon to the King Edward VII. Hospital, Windsor, presided over the annual dinner of the medical school, held at the Trocadero Restaurant on Sept. 30th. Proposing the first toast, Lieut.-Colonel H. E. Verey, chairman of the hospital board, said that the great event of the year had of course been the rebuilding of the medical school and pathological institute, which would, he hoped, be finished and occupied this time next year. The policy of buying the island site in 1927 had been more than justified, and though the hospital was still feeling severely the financial sacrifice then required, he hoped that as soon as the present building had been paid for a united effort would be made to complete the new nurses' home. The expansion of St. Mary's depended on this project and the need was urgent, especially in view of the powers now given to public authorities to construct State-supported hospitals. The policy of St. Mary's had been, wherever possible, to secure the coöperation of the local authorities so as to retain all the public and semi-public medical departments which were essential if the medical school was to provide the complete curriculum on one and the same premises. By this policy they had succeeded in retaining the tuberculosis dispensary, the treatment of L.C.C. school-children, and a great number of other public health services, and next April a maternity ward was to be opened whose cost of maintenance would be met by the Paddington borough council. Thus, without any maintenance cost to the hospital, enough clinical material would be provided for the instruction of students. He felt that the treatment of the sick and the advancement of science depended on the freedom, elasticity, individuality, flexibility, initiative, and responsiveness which in this country had always been the outcome of voluntary work. After referring to the death of Mr. Prideaux, chairman of the board of management for more than eleven years, and Mr. Stower, a vice-chairman—from both of whom the hospital would receive large legacies—Colonel Verey went on to speak of the appeal being made in connexion with the centenary of Lewis Carroll. Some £3000 had already been contributed towards the £10,000 that was needed to establish a model children's ward at St. Mary's, and no fitter memorial could be found for a man who had loved and amused children, and whose nephew, Prof. B. J. Collingwood, was now a member of the hospital staff.—Dr. C. M. Wilson, dean of the medical school, spoke of the lead which St. Mary's had given in arranging post-graduate courses for old students. With an entry this year of 60, and with the new buildings up, it might be imagined that the work of advancement was over; but life, he insisted, was movement, and without further effort their plans could not be realised.—Dr. Wilfred Harris, in proposing the health of the chairman, was limited by a ruling that speeches should be very short; but his brief remarks reflected the goodwill of the company, and Sir Joseph Skevington expressed his thanks.

St. George's Hospital

The annual dinner of the medical school was held at the Hyde Park Hotel on Oct. 1st. The chair was taken by Sir Crisp English, senior surgeon to the hospital, and about 150 past and present St. George's men attended. Among the guests were Lord Greville, treasurer of the hospital, Captain Evan Wallace, M.P., Sir Henry Newland, of Adelaide, and Dr. G. C. Anderson, medical secretary of the British Medical Association. Captain Wallace, in proposing the toast of the Medical School said that he and his colleagues of the house committee were very proud of their school, and wished that, with the help of an enlightened public, they could provide a more modern and efficient building for it to work in. In the course of a witty speech he reminded the medical profession that, although its rewards were precarious, it had the satisfaction of being universally respected and honoured, whereas his own profession was almost universally despised and made fun of. Dr. Anthony Feiling, dean of the medical school, who responded, said that the school was in an exceptionally healthy state, apart from its actual bricks and mortar. Although they might dream of tessellated pavements and marble swimming-baths, excellent work was being done in the old surroundings. The examination results in the past year had been above the average. Dr. Feiling also referred to the death of two distinguished St. George's men during the past year—Sir William Bennett and Dr. F. G. Penrose. Mr. P. T. Cooper, who also responded for the school, expressed the point of view of the students and those recently qualified. He managed to make amusing observations at the expense of many members of the staff. Mr. Ivor Back, in proposing the health of the Chairman, spoke of Sir Crisp's approaching retirement from the active staff. It was common knowledge that the chairman had been successful in his profession, and he had heard it said that he had had a lot of luck. Success in the medical profession, however, was not due to luck. The goddess of fortune would pay a man no attention unless she perceived the qualities that make for greatness—namely, kindness, tolerance, and a knowledge of human nature, allied to a first-class technical skill and a sound clinical instinct. All of these things the chairman possessed in an extraordinary degree. Further, during his life on the active staff, he had been a great friend and a great servant of the hospital which gave him his medical birth and nurture, and the whole of his ardent spirit had been devoted to the "Corner." They wished him many years of health and vigour in which to conquer fresh worlds and pastures new. Sir Crisp English expressed his gratitude to the speakers and to all his friends present. He took the opportunity of thanking those who had helped him during his life at the hospital—his house surgeons, the sisters and nurses, the lay committee members, the treasurer, the secretary, and the porters. He would always retain his love for the hospital and would always resist changes which might tend to destroy its individuality.

Charing Cross Hospital

In the absence of Dr. William Hunter, Mr. C. Carter Braine presided over the annual dinner of the medical school at Gatti's Restaurant on Oct. 1st. He had previously occupied the chair, he said, in 1894, and he felt that once was enough. His experience went back over 50 of these dinners, and he recalled old days at the Holborn Restaurant and elsewhere, when the programme always included two songs—The Laird o' Cockpen, from Cantlie, and Ten Thousand Miles Away. What a contrast there was between the hospital when he entered it and the hospital of to-day! Then it was dull, dismal, and badly ventilated; there were rings screwed in the floors of the wards—for the reduction of dislocations. Then came antiseptic methods. At 9 P.M. the night before an operation the carbolic spray was started in the theatre, and when the surgeon began work at 9 A.M. next day the atmosphere was that of a London fog, so that subsequent carboluria was common. There was only one operating day. The patients were admitted two or three days before the operation, to get acclimatised. They often did get acclimatised—and walked out. Mr. Braine described himself as the last of the septic house surgeons.—Mr. Crook, dean of the medical school, began by acknowledging the kindly efforts of laymen to leave their bodies—some with appendix intact—for dissection; but rapidly passed on to the more congenial subject of football. The school, he said, had beaten University College Hospital at rugger; "and in many ways," he added wistfully, "we very nearly beat George's." Mr. Bright Banister recalled the chairman's power to induce perfect anæsthesia with a smell of indiarubber and a powerful personality. In proposing his health he spoke in very warm terms of Mr. Carter Braine's association with the hospital, in which he had always shown himself an honour to the profession. By way of reply the chairman said that he had not expected to enjoy his evening, but he had certainly done so; and he hoped that everyone else had done the same. The general air of the gathering, and the applause greeting the songs of Dr. S. Taylor Harris and Mr. Frank Hart, left no doubt that this hope was fully realised.

Westminster Hospital

Past and present members of the medical school sat down to dinner at Grosvenor House, Park-lane, on Oct. 1st, when the chair was taken by Dr. R. Nimmo Watson, honorary physician to the Royal Bath Hospital at Harrogate. After an excellent repast the toast of "Hospital and Medical School" was proposed by Mr. Arthur Evans, surgeon to the hospital, who recounted the doings of the past twelvemonth, with particular reference to the development of new laboratories under Dr. R. J. V. Pulvertaft. He welcomed the new out-patient clinic for early mental cases which was breaking fresh ground, and foreshadowed not only prosperity but continued expansion for the Westminster school. In reply, Dr. Bennett A. Coles, an old resident, paid a tribute to his mentors, painting one by one a series of word-pictures which were appreciated as much by the victims as by his other hearers. He intended, as he said, to get his own back—and he did. Dr. Arnold Stott proposing "The Visitors," coupled with the toast the names of Sir Holburt Waring, P.R.C.S., and the Dean of Westminster. He wanted to express gratitude to the two governors present, Mr. Austin Taylor and Lt.-Col. H. C. Bulkeley, who indulged in the kindly practice of providing the hospital, including the sports ground, with machines of all kinds. In welcoming the representative of THE LANCET, Dr. Stott read from an

issue of a century ago a lively complaint of the way in which the hospital staff wasted the time of the students—Mr. Guthrie only being punctual in his attendance; and regretted the absence from our present-day columns of such homely and libellous details. Sir Holburt, in reply, attributed his priority in speaking to the fact that he had once been addressed as "The Very Rev. the Dean of St. Bartholomew's Hospital." He spoke of improvements in the curriculum of medical education, to be suggested by a committee appointed to consolidate, improve, and unify medical education in the metropolis, where, he said, the problem was of peculiar difficulty owing to the requirements of the various examining bodies. Referring to the British Pharmacopœia issued that day, he continued to cherish a hope for the issue of a basic pharmacopœia for the benefit of the medical student. Dr. Foxley Norris told a story about a Scottish ferry with an exhaustive tariff for different kinds of vehicles and passengers, which broke down when a menagerie came that way; if you fully retail the list of guests you may, he said, leave out the elephants. He was himself the great grandson of Pott's fracture, and as four generations of forbears on his mother's side hung on the walls of the College of Surgeons he did not feel a total stranger at the gathering. Incidentally he revealed that the chairman, as chieftain of the Macgillivrays, should have been wearing the kilt. The toast of "The Chairman" was proposed by Dr. Thompson Barron, who told stories of student days which inculpated himself as much as Dr. Watson, who rounded on him later with the outspokeness of one who had lived a long while in the West Riding. At the conclusion of his lively reminiscences, tribute was paid to the team-work of the dinner secretaries, Dr. W. Ernest Lloyd and Dr. Peter Kerley.

St. Bartholomew's Hospital

Prof. G. E. Gask presided at the old students' dinner on Oct. 3rd, when there was a very large attendance of old Bart.'s men from all parts of the country, and an unusual number of distinguished guests. In proposing "The Hospital and Medical College," Mr. Gask made the traditional survey of past, present, and future. He referred with feeling to a number of old students who had maintained the traditions of the school—Ross, Andrewes, Calvert, Legge, and many others. To the memory of Nigel Cohen, a present student killed in an aeroplane crash, a little garden had been dedicated in the hospital square. Dealing with the living, he congratulated the treasurer, Lord Stanmore, on becoming a member of the Privy Council, Sir Holburt Waring and Prof. Langdon Brown on appointment to high office. No outstanding event, he said, had occurred during the year, but the new surgical block continued to approve itself. The governors' plan of continuous steady development went on, and hope still burned that the whole hospital would gradually be rebuilt. In the medical school last year there were 126 full students; this year far more, 90 per cent. of them university graduates or undergraduates. There had been many successes in the athletic field, including a nearly successful attempt to swim the Channel; next year, with a bit of luck, we might hope to see a Bart.'s man at the summit of Mount Everest. The present-day student, he was satisfied, showed no lack of initiative, but medical education had not kept pace with the golden age of medicine in which we were living. The teaching staff numbered 102 individuals; various departments were bursting for room and the school must expand. Now came the opportunity, almost too good to be true, of transferring the whole college to the Charterhouse site, an ideal in support of which the teaching staff had put up the sum of £12,000, almost the equivalent of a whole year's emolument. The proposed expansion was not just for the honour and glory of Bart.'s; the medical schools of London, he felt, must increasingly unite, amalgamate, and coöperate. The scheme was to promote British medicine in its biggest and widest sense. Mr. Reginald Vick, as warden of the residential college, proposed "The Guests," regretting that the Medical College could offer the boundlessly hospitable city fathers in these hard times nothing more than a nourishing and wholesome repast. He welcomed the presence of the treasurer and almoners, the heads of the Medical Services, the city dignitaries, among them Sir George Wilkinson who that morning had received the accolade, the masters of four city companies and of the Apothecaries, the Regius professor medicine at Oxford, the quondam Bishop of Chester, the high master of St. Paul's School, the senior surgeons of Guy's and St. Thomas's, and especially Sir Henry Newland, president of the Royal Australasian College of Surgeons. Sir Farquhar Buzzard, on behalf of the guests, returned thanks for its good cheer to a medical school which, he admitted, was one of the most progressive on the north side of the river. In the course of the evening several old students agreeably entertained the company, Dr. Nicholson with a song, Mr. Richards with a violin solo, and Dr. Cullinan with sleight of hand.

Middlesex Hospital

Mr. Eric Pearce Gould, who took the chair at the annual dinner at the Savoy Hotel on Oct. 4th, said that even the economies of the past year had had their silver lining; for instance the setting-aside of rooms for paying patients was providing experience which would be useful when the Woolavington block was opened next year. They had also had a golden lining; for the suggestion that research should be curtailed had led Mr. S. A. Courtauld to give £20,000 to prevent this happening. As regards the achievements of the year, the students (though not the nurses) were still hiding their athletic prowess under a bushel; however, in another branch, the hospital had doubled its representation on the council of the Royal College of Surgeons, and by the addition of Mr. Gordon-Taylor and Mr. A. E. Webb-Johnson had contributed not only surgical distinction but administrative ability. But the greatest changes of the past twelve months were structural. The steel framework of the east wing was now in position and the work of casing it had begun. The money for the steel and most of the casing was available, but a considerable further sum would be required for completion and equipment, and an appeal to the public would be made within a few days. If it was said that this was not the time for expansion of the voluntary hospitals, his answer was that these hospitals were the standard by which all hospitals must be judged, and they must continue to lead. In two years' time, if all went well, the building would be complete. Mr. S. A. Courtauld, chairman of the council of the medical school, mentioned that Middlesex men (Dr. J. G. Scadding and Mr. P. B. Ascroft) had won gold medals in the M.D. and the M.S. examinations of the University of London. The entrance to the school in the past year had been far the highest, certainly since the war, and with the hope of better times the hospital could look forward confidently to its centenary in 1934. Dr. Izod Bennett, dean of the medical school, said that his chief task was to bring about coöperation; but what was called team-work, if unintelligently applied, could do as much harm as it could do good in other circumstances—a statement which he supported by a moving story. Mr. H. W. Salmon, with the licence of a senior Broderip scholar, was fluently shocking; but Mr. Webb-Johnson in proposing The Guests soon sobered his hearers by recalling the great benefactions received from some of them. His toast was coupled with the name of Major J. J. Astor, M.P., and he told for the first time how Major Astor had come to the aid of the medical school in its difficulties. The chair of physiology had an endowment worth over £32,000. This was the anonymous gift of Major Astor twelve years ago, and application was now being made to the University of London to have the professorship linked with his name. Major Astor in his reply said that organisations like the Middlesex were characterised by sympathy, efficiency, and cheerfulness. Those who work in hospitals had these qualities so highly developed that he wondered why they could not eliminate in other people, perhaps by a simple operation, such qualities as mistrust and pessimism; at any rate, he said, they had done this to their guests to night. Dr. G. E. S. Ward spoke of the chairman's services to the Hospital, and those of his father before him, and Mr. Pearce Gould's health was drunk with musical honours.

Leeds University

At recent examinations the following candidates were successful:—

M.D.

G. F. Bramley (with distinction) and R. C. Hanson.

FINAL EXAMINATION FOR M.B., CH.B.

Part I.—G. Cohda, A. Cohen, P. Crann, T. A. Divine, R. W. Rutter, T. Simpson, A. Smith, J. F. Warin, and Lydia A. Wilson.

Part II.—B. W. A. Fleming, J. J. Fry, J. S. Gourlay, E. James, J. Littlewood, R. Raines, M. Rosental, S. Strasburg, and J. Taylor.

Part III.—M. Rosental (second-class honours), B. W. A. Fleming, J. J. Fry, J. S. Gourlay, F. R. W. Hemsley, E. A. James, E. James, F. C. Leach, J. Littlewood, R. Raines, S. Strasburg, and J. Taylor.

Old Regulations.—M. A. Rashid.

FINAL EXAMINATION FOR L.D.S.

C. L. Davidson, J. D. Sykes, F. Wilcock, and G. O. Wood.

The William Hey Medal and the West Riding Panel Practitioners' Prize have been awarded to E. Gledhill.

Chadwick Lectures

On Thursday, Oct. 20th, Sir Humphry Rolleston will give a lecture on the Pioneers and Progress of Preventive Medicine. It will be delivered in the theatre of the Royal United Services Institution, Whitehall, London, at 5.15 P.M. Particulars of subsequent lectures may be had from the secretary of the Chadwick Trust, 204, Abbey House, Westminster.

University of London

The Common Council of the City of London have passed a resolution recommending that £100,000 be given towards the cost of the new University hall.

London Hospital Medical College.—The Schorstein memorial lecture will be delivered in the anatomical theatre of the College at 4.30 P.M. on Thursday, Oct. 13th, by Dr. Otfrid Foerster, professor of neurology in the University of Breslau. His subject will be Dermatomes in Man. Members of the medical profession are invited to attend.

Royal College of Surgeons of England

Demonstrations of museum specimens, for advanced students and medical practitioners, will be given in the theatre of the College at 5 P.M. on Mondays and Fridays, from Oct. 17th to Nov. 7th. The Friday demonstrations will be by Sir Arthur Keith, whose subjects will be: (1) Bone Lesions Produced in Syphilis and in Yaws; (2) the Antiquity of Certain Diseases, particularly of Syphilis; and (3) the Various Forms of Teratoma which Arise in the Notochordal Tract. On Mondays, Oct. 17th and 24th, Mr. C. P. G. Wakeley will deal with Innocent and Malignant Tumours of the Alimentary Tract. Mr. R. Davies-Colley will speak on Intestinal Cysts and Diverticula (Oct. 31st) and on Tumours of the Jaw (Nov. 7th).

West London Medico-Chirurgical Society

The first meeting of the session will be held at the West London Hospital at 8.30 P.M. to-day, Friday, Oct. 7th, when Dr. Julius Burnford will deliver his presidential address entitled: A Therapeutic Survey. The subtitle of the address is: "Fifty million bottles of medicine were issued to nsured persons during the year 1931."

South-West London Medical Society

This society will hold its annual dinner on Wednesday next, Oct. 12th. The first meeting of the session will be held on Oct. 26th, at 8.45 P.M., when Dr. W. Langdon Brown, Regius professor of physic in the University of Cambridge, will deliver an address on Allergy and Some Allergic Diseases. The meetings are held at the Bolingbroke Hospital, Wandsworth.

Fellowship of Medicine and Post-Graduate Medical Association

A course in general medicine and surgery will take place at the Miller General Hospital, Greenwich, from Oct. 17th to 29th. The whole of each day will be occupied with demonstrations, operations, and lectures; and the course is primarily designed for general practitioners. A week-end course in clinical surgery will be given at the Royal Albert Dock Hospital on Saturday and Sunday, Oct. 15th and 16th, occupying the whole of each day with demonstrations, and another, in obstetrics, will take place at the City of London Maternity Hospital on Saturday and Sunday, Oct. 29th and 30th. A weekly course on Uterine Infections in Obstetrics and Gynæcology is given at the St. Mary Abbots Hospital, Kensington; not more than four post-graduates may attend any one week. A series of afternoon lectures on renal disease will be given at the Medical Society of London, at 4 P.M. on Tuesdays from Oct. 18th to Dec. 13th; these are free to members of the Fellowship. A panel of teachers, prepared to give clinical instruction, has been formed, and clinics may be attended by arrangement. Further details may be had from the secretary of the Fellowship, at 1, Wimpole-street, London, W.1.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE

C. J. Waring to be Surg. Lt.

The following appointments are notified: Surg.-Comdrs. A. G. Taylor to *Berwick*; L. F. Strugnell to *Vivid*, for Devonport Barracks; J. L. Priston to *Glorious*; and J. F. Haynes to *Sandhurst*.

Surg. Lt.-Comdr. (D) D. Barker to *Pembroke*, for R.N.B., Chatham.

Surg. Lt. H. D. Plunkett to *Vivid*, for R.N.B., Devonport.

ROYAL ARMY MEDICAL CORPS

Maj. H. J. G. Wells retires on retd. pay.

Capt. T. A. J. M. Dodd retires receiving a gratuity.

Capt. R. Le G. Worsley relinquishes his temp. commn. and is granted the rank of Capt.

INDIAN MEDICAL SERVICE

Lt. E. B. Eedle to be Capt.

Capt. M. N. Khanna relinquishes his temp. commn.

ROYAL AIR FORCE

Flight Lt. R. J. K. Chattey relinquishes his commn. on completion of service.

Medical Diary

SOCIETIES

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MONDAY, Oct. 10th.—4.30 P.M., UNITED SERVICES. Group-Captain A. W. Iredell: An Account of Mosquito-proofing Carried Out by the Royal Air Force in India. (Presidential Address.)

FRIDAY.—5.30 P.M., CLINICAL. (Cases at 4.30 P.M.) Mr. Philip Turner: 1. Lumbar Hernia. Mr. Harold Edwards: 2. Sarcoma of Nose with Apparent Cure. Dr. Geoffrey Evans and Dr. R. G. Anderson: 3. Hereditary Ataxia. Dr. F. Parkes Weber: 4. Persistent Œdema of Right Lower Limb. Other cases will be shown. 8.30 P.M., OPHTHALMOLOGY. (Cases at 8 P.M.) Mr. A. C. Hudson: Some Surgical Experiences Relative to Disorders of the Lens. (Presidential Address.) Cases: Mr. A. C. Hudson: 1. Arachnodactyly with Dislocated Lenses. 2. Iridotomy for Dislocated Lenses. 3. Sarcoma of Choroid. Mr. Humphrey Neame: 4. Detachment of the Retina treated by Multiple Cautery-puncture, over 5 years' old. Other cases will be shown.

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W.

MONDAY, Oct. 10th.—8 P.M., Annual General Meeting: 8.30 P.M., Presidential Address by Sir John Broadbent on Recent Advances in Our Knowledge as to the Ætiology and Treatment of Some of the Acute Infective Fevers.

WEST LONDON MEDICO-CHIRURGICAL SOCIETY.

THURSDAY, Oct. 13th.—3.30 P.M., Sir William Hale-White: Bacilluria.

PADDINGTON MEDICAL SOCIETY.

TUESDAY, Oct. 11th.—9 P.M. (at the Great Western Royal Hotel, Paddington), Mr. A. S. Blundell Bankart: Manipulative Surgery in General Practice.

HARVEIAN SOCIETY OF LONDON.

THURSDAY, Oct. 13th.—8.30 P.M. (at Hammersmith Hospital), Sir H. Gillies: Plastic Surgery.

MEDICAL SOCIETY OF INDIVIDUAL PSYCHOLOGY, 11, Chandos-street, W.

THURSDAY, Oct. 13th.—8.30 P.M., Dr. Seif, of Munich: Opening Address.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

LONDON HOSPITAL POST-GRADUATE COURSE.

WEDNESDAY, Oct. 12th.—10.15 A.M., Dr. P. N. Panton: Staphylococcal Infection. 11 A.M., Dr. Donald Hunter: The Treatment of Anæmia. 11.45 A.M., Mr. Hugh Cairns and Dr. W. Russell Brain: Discussion on the Treatment of Head Injuries and their Sequels. 1.30 P.M., Mr. Alan Perry: Subject to be announced later. 2 P.M., Mr. Norman Patterson: Operations. 2 P.M., Dr. George Riddoch: Demonstration of Cases: 2 P.M., Mr. E. C. Lindsay: Surgical Operations. 3 P.M., Dr. A. E. Clark-Kennedy: Ward Demonstration; Anasarca and its Treatment. 3 P.M., Dr. Maitland Jones: Demonstration of Cases.

THURSDAY.—10 A.M., Mr. F. Muecke: Practical Points in Diseases of the Ear, Nose, and Throat. 11 A.M., Dr. W. J. O'Donovan: Quackery in Dermatology. 12 A.M., Mr. Hugh Lett: Cystitis. 1.30 P.M., Mr. W. S. Perrin: Anal Fistula. 2 P.M., Dr. John Parkinson: Demonstration of Cases. 2 P.M., Mr. W. Morris: Tonsil Operations. 2 P.M., Mr. Victor Lack and Mr. R. A. Brews: Antenatal Clinic. 3 P.M., Dr. R. A. Rowlands: Ward Demonstration. 4.30 P.M., Prof. O. Foerster: Schorstein lecture on Dermatomes in Man.

FRIDAY.—10 A.M., Mr. R. Milne: The Undependable Knee. 11 A.M., Mr. Eardley Holland: Indications for Inducing Abortion. 12 A.M., Dr. Cecil Wall: The Management of Pulmonary Tuberculosis. 1.30 P.M., Dr. G. Vilvandré: X Ray Demonstration. 1.30 P.M., Mr. A. J. Walton: Surgical Operations. 2 P.M., Mr. G. E. Neligan: Surgical Operation. 2.30 P.M., Mr. V. W. Dix: Demonstration of Cases. 2.30 P.M., Dr. O. Leyton: Ward Demonstration. 3.45 P.M., Dr. Robert Hutchison: Chronic Diarrhœa. 5 P.M., Dr. S. P. Bedson: Some Recent Work on Filtrable Viruses and its Significance. 9 P.M., Dr. A. Daly: Demonstration of Methods of Anæsthesia.

SATURDAY.—10 A.M., Dr. Theodore Thompson: The Diagnosis of Obscure Pyrexias. 11 A.M., Mr. Russell Howard: Ward Demonstration. 12 A.M., Mr. A. J. Walton: Lecture Demonstration on Carcinoma of the Stomach. (This course is for former students of the London Hospital only.)

UNIVERSITY COLLEGE HOSPITAL POST-GRADUATE COURSE.

THURSDAY, Oct. 13th.—10 A.M., Dr. F. J. Poynton: The Dawn of Organic Heart Disease. 11 A.M., Dr. A. M. H. Gray: Eczema. 11 A.M., Mr. Julian Taylor and Dr. K. E. Harris: Demonstration of Cases of Toxic Goitre. 2 P.M., Mr. E. A. Peters: Naso-pharyngeal Sepsis in Relation with Chronic Bronchitis and Emphysema. 3 P.M., Mr. E. K. Martin: Carcinoma of Colon.

FRIDAY.—10 A.M., Sir Thomas Lewis: Fainting Attacks. 11 A.M., Mr. F. J. F. Barrington: Treatment of Senile Enlargement of Prostate. 2 P.M., Prof. A. E. Boycott: Carcinoma of Lung. 2 P.M., Mr. Clifford White: Chronic Pelvic Pain in Women. 3 P.M.,

Mr. H. Morriston Davies: Lung Surgery. (This course is open only to graduates and students of the School.)

SOCIETY FOR THE STUDY OF INEBRIETY.
TUESDAY, Oct. 11th.—4 P.M. (at 11, Chandos-street, W.). Dr. J. R. Rees: Psychological Factors in the Prevention and Treatment of Alcohol and Drug Addiction.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.
MONDAY, Oct. 10th, to SATURDAY, Oct. 14th.—NATIONAL HOSPITAL FOR DISEASES OF THE HEART, Westmoreland-street, W. All day course in Cardiology, lectures and demonstrations.—CHELSEA HOSPITAL FOR WOMEN, Arthur-street, S.W. Course in Gynæcology, mornings and/or afternoons.—METROPOLITAN HOSPITAL, Kingsland-road, E. All day course in General Medicine and Surgery, especially suitable for general practitioners.—ST. JOHN'S HOSPITAL, Leicester-square, W.C. Afternoon and evening course in Dermatology. Clinical instruction and lectures.—CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL, Gray's Inn-road, W.C. All day course in Diseases of the Ear, Nose, and Throat.—ROYAL ALBERT DOCK HOSPITAL, S.E. Week-end Course in Clinical Surgery. Saturday and Sunday all day.—LONDON LIGHT CLINIC, Ranelagh-road, S.W. Evening lecture-demonstration in Physical Medicine. Mondays and Wednesdays, 8 to 9 P.M.—These courses are open only to Members of the Fellowship of Medicine.

KING'S COLLEGE HOSPITAL MEDICAL SCHOOL, Denmark-hill, S.E.
THURSDAY, Oct. 13th.—9 P.M., Dr. W. Sheldon: Nervous Habits in Children.

ROYAL INSTITUTE OF PUBLIC HEALTH, Queen-square, W.C.
MONDAY, Oct. 10th, and following TUESDAY and WEDNESDAY at 4 P.M., Prof. Max Neisser (Frankfort): Some New Investigations Regarding Old Bacteriological Problems. (Harben lectures.)

LONDON SCHOOL OF DERMATOLOGY, St. John's Hospital, Leicester-square, W.C.
TUESDAY, Oct. 11th.—5 P.M., Dr. W. N. Goldsmith: Anatomy and Physiology of the Skin.
THURSDAY.—5 P.M., Dr. I. Muende: Pathology Demonstration.

MANCHESTER HOSPITAL FOR CONSUMPTION AND DISEASES OF THE THROAT AND CHEST, Hardman-street, Deansgate.
WEDNESDAY, Oct. 12th.—4.30 P.M., Dr. L. R. Clarke: Some Recent Advances in the Diagnosis and Treatment of Pulmonary Tuberculosis.

ANCOATS HOSPITAL, Manchester.
THURSDAY, Oct. 13th.—Dr. W. J. S. Reid: Anæmias of Chlorotic Type.

MANCHESTER ROYAL INFIRMARY.
TUESDAY, Oct. 11th.—4.15 P.M., Mr. P. R. Wrigley: Goitre.
FRIDAY.—4.15 P.M., Mr. J. Morley: Demonstration of Surgical Cases.

Appointments

City of London Maternity Hospital: LANNAMAN, L. J., L.R.C.P. Lond., M.R.C.S., Senior Resident Medical Officer; DAVIES, J. O. F., M.B., B.S. Lond., Assistant Resident Medical Officer.

Vacancies

For further information refer to the advertisement columns.

Barry Urban District Council Surgical Hospital.—H.S. At rate of £200.
Beckenham, Bethlem Hospital, Monk's Orchard, Eden Park.—Res. H.P. At rate of £150.
Birmingham, Little Bromwich Hospital for Infectious Diseases.—Jun. Asst. M.O. £300.
Birmingham, Queen's Hospital.—Biochemist. £500.
Bolingbroke Hospital, Wandsworth Common, S.W.—H.S. At rate of £120.
Bradford, Royal Eye and Ear Hospital.—Jun. H.S. £150.
Brentwood, High Wood Hospital for Children.—Asst. M.O. £350.
Cambridge, Addenbrooke's Hospital.—H.P. At rate of £130.
Cancer Hospital, Fulham-road, S.W.—Hon. Neurologist, Hon. Dermatologist, Hon. Gynæcologist. Hon. Ophthalmic Surgeon.
Canterbury, Borough Mental Hospital.—Asst. M.O. £350.
Cheltenham General and Eye Hospitals.—Hon. Surgeon for Ear, Throat, and Nose Diseases.
Chester, East Lancashire Tuberculosis Colony, Barrowmore Hall, Great Barrow.—H.P. At rate of £100.
Chester Royal Infirmary.—H.S. £150.
City of London Hospital for Diseases of the Heart and Lungs, Victoria Park, E.—H.P. At rate of £100.
Colindale Hospital, Colindale-avenue, N.W.—Sen. Asst. M.O. £500.
Coventry and Warwickshire Hospital.—Res. H.S. £125.
Durham County Hospital.—Second H.S. £150.
East London Hospital for Children, &c., Shadwell, E.—Asst. Surgeon to Nose, Throat, and Ear Dept. Res. H.P. £125. Also Asst. Physician. £40.
Eastbourne, Princess Alice Memorial Hospital.—H.S. At rate of £150. Also Secretary. £300–£600.
Farnborough Institution Hospital, Kent.—Res. Asst. M.O. £250.
Gloucester County and City Mental Hospital.—Jun. Asst. M.O. £350.
Gloucester, Gloucestershire Royal Infirmary, &c.—Hon. Anæsthetist.
Hampstead General and North-west London Hospital, Haverstock-hill, N.W.—H.S. At rate of £100.
Hospital for Epilepsy and Paralysis, Maida Vale, W.—Res. M.O. and H.P. At rate of £150 and £100 respectively.
Hove Hospital.—Res. M.O. £200.
Hull Royal Infirmary.—Asst. Pathologist. 10 gns. per week.
Italian Hospital, Queen-square, W.C.—Hon. Asst. Anæsthetist.
Lancaster Royal Infirmary.—Jun. H.S. At rate of £130.
Leeds Hospital for Women.—H.S. At rate of £100.
Liverpool, County Mental Hospital, Rainhill.—Asst. M.O. £500.
London County Council.—Temporary District M.O.'s. At rate of £156 and £150.
Lowestoft, St. Luke's Hospital.—Sen. Asst. M.O. £500.
Manchester City Education Committee.—Asst. School M.O. £600.
Manchester, Royal Children's Hospital.—Asst. M.O. for Out-patients' Dept. At rate of £150.
Manchester, St. Mary's Hospitals.—Two H.S.'s for Whitworth-street West Hospital. Each at rate of £50.
Medway Institution Hospital, Kent.—Res. Asst. M.O. £250.
Minehead and West Somerset Hospital.—Res. M.O. At rate of £150.
Monmouthshire County Council.—Asst. M.O. £500.
Nottingham, Harlow Wood Orthopædic Hospital.—Asst. to the Surgeon in Charge. £450.
Princess Louise Kensington Hospital for Children, St. Quintin-avenue, W.—Hon. Asst. Surg. to Nose, Throat, and Ear Dept.
Queen Charlotte's Maternity Hospital, Marylebone-road, N.W.—Obstetric Surgeon to Out-patients.
Radium Institute, Riding House-street, W.—H.S. At rate of £150.
Reading, Royal Berkshire Hospital.—Res. Anæsthetist. £150.
Rotherham Hospital.—H.P. £180.
Royal National Orthopædic Hospital, 234, Gt. Portland-street, W. Two Registrars. Each £105.
Royal Northern Hospital, Holloway, N.—H.S. At rate of £70.
St. Bartholomew's Hospital, London, E.C.—Asst. Phys.
St. John's Hospital, Lewisham, S.E.—Hon. Anæsthetist.
St. Mary's Hospital, W.—Med. Supt. £400.
St. Mary's Hospital for Women and Children, Plaistow, E.—Res. and Asst. Res. M.O.'s. At rate of £175 and £120 respectively.
Samaritan Free Hospital for Women, Marylebone-road, N.W.—H.S. At rate of £100.
Scarborough Hospital and Dispensary.—Two H.S.'s. Each at rate of £175.
South Shields, Harton Hospital.—H.S. At rate of £150.
Taunton and Somerset Hospital.—H.S. £100.
Torquay, Torbay Hospital.—H.S. £175.
Uxbridge, Hillingdon County Hospital.—Chief Asst. Radiographer. £225.
Violet Melchett Infant Welfare Centre, &c., Wellington-street, Chelsea.—M.O. £50.
West London Hospital, Hammersmith-road, W.—Hon. Anæsthetist. Also Dermatologist and Physician.
Western Ophthalmic Hospital, Marylebone-road, N.W.—Sen. Res. H.S. and Jun. H.S. At rate of £150 and £100 respectively.
Westminster Hospital, Broad Sanctuary, S.W.—Jun. Asst. Pathologist. At rate of £150.

The Chief Inspector of Factories announces a vacant appointment for a Certifying Factory Surgeon at Lymm (Chester).

Births, Marriages, and Deaths

MARRIAGES

JACKSON—HALLINAN.—On Oct. 1st, at the Church of the Holy Cross, Catford, William Eric Jackson, LL.B., Barrister-at-Law, to Eileen Hallinan, M.R.C.S., L.R.C.P., younger daughter of the late J. T. Hallinan, J.P., and Mrs. Hallinan, of Canadian-avenue, Catford.

MILLIS—OSBORNE.—On Sept. 29th, at Christ Church, Rathgar, Dublin, Grosvenor Charles Millis, M.C., M.A., M.B., M.R.C.P., to Ruth Henderson, second daughter of the Rev. Dr. Osborne and Mrs. Osborne, of Fairfield House, Rathgar, Dublin.

RUTHERFURD—JACKSON.—At Kilmacolm Old Kirk, on Sept. 21st 1932, by the Rev. Foster Franklin, M.A., and the Rev. John W. Coutts, M.A., Richard Napier Rutherfurd, B.Sc., A.M.I.C.E., son of the late Henry Rutherfurd, M.A., M.B., C.M., and Mrs. Rutherfurd, 20, Bute-gardens, Glasgow, to Elinor Drinkwater Jackson, F.R.C.S. Edin., elder daughter of Mr. and Mrs. S. Douglas Jackson, Shenvalla, Kilmacolm.

STEWART—PULMAN.—On Sept. 28th, at St. Philip's Church, Girlington, Bradford, Henry Hamilton Stewart, M.A., F.R.C.S., to Edna Mary, elder daughter of Mr. and Mrs. Harold H. Pulman, of Hazel Mount, Chellow Dean, Bradford.

DEATHS

LILLEY.—On Sept. 29th, Frederic Graham Lilley, L.D.S. R.C.S. Eng., aged 30 years.

STIRLING.—On Oct. 1st, at The Lindens, Victoria Park, Manchester, William Stirling, LL.D., D.Sc., M.D., late Brackenbury Professor of Physiology, Victoria University, Manchester, in his 82nd year.

WARLIKER.—On Sept. 27th, at a nursing-home, after a short illness, Lieut.-Colonel D. P. Warliker (retired), I.M.S., of Wessex Way, Golders Green.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

NOTES, COMMENTS, AND ABSTRACTS

THE MEDICAL QUARTER[1]

THE medical quarter of London, as Cavendish-square and the surrounding streets are termed here, is described in detail by Dr. Bryan, an outline map illustrating well the development of the district. The ownership of "the manor and parish, in the Hundred of Ossulston, Middlesex, anciently called Tyburn," has had many interesting vicissitudes. Renamed Marylebone, from the Church of St. Mary (not Mary-the-Good, but Mary-at-Burn), it was acquired in the sixteenth century by Henry VIII. from one Hotson, leased by Queen Elizabeth to the Forsyth family, reacquired by James I., pawned by Charles II., seized by Cromwell, and reseized by Charles II. But James I. had sold the Harley-street area back to the Forsyths, from whom it passed by marriage settlement to the Austin family. The Austins sold their property in the reign of Queen Anne to John Holles, a commoner who had married the only child of the Duke of Newcastle, and had been granted the title of his father-in-law, apparently because he was very rich. But Holles had no son, and the property passed to his daughter, Lady Henrietta Cavendish Holles, who married Edward Harley, Earl of Oxford of a new creation, and owner of the Wigmore estate in Hertfordshire, and of the Wimpole estate in Cambridgeshire. Again the property devolved on an only daughter, who married William Bentinck, Duke of Portland, owner of Welbeck Abbey, and a follower of William III. The spend-thrift Duke of Chandos acquired the site whereon Chandos-street is built, having one wing of the unfinished Chandos House upon it, while Langham-place and the Langham Hotel are named after Sir John Langham, who built the hotel. The nomen-clature of the estate planned by the Portland family is thus comprehensively explained.

In 1720, when Cavendish-square was first laid out, a Dr. James Newton came there to practice, and towards the end of the century we find the famous Matthew Baillie residing there, but it was not until the end of the first quarter of the nineteenth century that the square and three or four streets in its immediate vicinity became a recognised centre for medical consultants, rapidly emptying the famous City centre, Finsbury-square. Since then the names of the medical residents in the area read like a roll-call of successful London doctors; and even more than the square itself, Harley-street, Wimpole-street, Queen Anne-street, and Portland-place keep up the historic connexion with medicine.

Dr. Bryan supplies many interesting biographical notes upon celebrated or notorious residents "round about Harley-street" since the estate was built. With such a varied choice before him among the doctors it is inevitable that his selection for notice should seem capricious, but what he has to say is amusing and substantially accurate. Many of our readers will be interested in the book.

TIMELY AIDS TO THE NEW PHARMACOPŒIA

The twentieth edition of Martindale and Westcott's "Extra Pharmacopœia" (London: H. K. Lewis and Co., Vol. I. Pp. 1216. 27*s.* 6*d.*) just issued gives in a synopsis the principal editions and changes to be effected in the B.P. 1932, as was done on previous occasions (1885, 1898, 1914) when a new edition was brought out. Many of the older preparations will, Mr. Martindale thinks, continue in favour and are accordingly retained with the note (B.P. '14.)—To help in understanding the British Pharmacopœia, 1932, which was first issued for sale on Saturday last, Mr. H. Wippell Gadd, formerly lecturer on pharmacy at the University College, Exeter, has brought out a twelfth edition of his well-known Synopsis (London: Baillière, Tindall and Cox. Pp. 189. 2*s.* 6*d.*), which contains a summary of its requirements for daily reference. The articles and preparations removed from the B.P. 1914 number over 300; all the decoctions have gone, several of the extracts, many of the tinctures and syrups, and there are now no official medicinal wines. A list is given of the principal drugs and preparations of which the composition or the strength has been altered. In addition to its regular features, the Synopsis contains a summary of the Dangerous Drugs Acts, 1920–1932.—A free copy of the B.D.H. Guide to the B.P., 1932, may be obtained on application to the British Drug Houses, Ltd. (Graham-street, City-road, London, N.1), in which attention is directed especially to the preparations which differ materially from the corresponding preparations of the B.P., 1914. Throughout the Guide, which contains 122 large and well printed pages, single and double rules clearly indicate substances which are official for the first time and those which are altered.—Messrs. Woolley Sons and Co., Ltd., of Manchester, have also issued a pamphlet of 83 pages containing the alterations, additions, and deletions in the new Pharmacopœia in a form that will allow of easy reference by pharmacists and medical practitioners.

[1] Round about Harley-street. By Dr. Cyril Bryan. London: John Bale, Sons and Danielsson, Ltd. 1932. Pp. 240. 5*s.*

NEW PREPARATIONS

MULTIBRAL (Messrs. H. R. Napp, Ltd., 3 and 4, Clement's-inn, Kingsway, London, W.C.)—We have received a sample of this preparation of sodium monobromoleate, for which the claim is made that it gives an intensive bromine action 20 times greater than bromides, while it is free from secondary toxic affections. The use of multibral is recommended in conditions of nervous excitability as well as in organic diseases where bromide is customarily prescribed, while the regulation of the dosage is left to the directions of the practitioner.

BOURN-VITA.—This preparation, manufactured by Messrs. Cadbury Bros. Ltd., Bournville, is recommended as a specially palatable method of obtaining the benefits derived from the ingestion of milk, eggs, and cocoa. The preparation contains a large percentage of malt, and as it is easily digested as well as restorative, the manufacturers recommend it specially as "a good-night drink."

SCIATAGO.—This drug, supplied in dragées by Messrs. Coates and Cooper, Ltd. (94 Clerkenwell-road, London, E.C.), combines Phenyl-Quinolin-Carboxylic Acid, Hexamethylene-tetramine and Glycocoll, and is a new attempt to meet the painful symptoms associated with rheumatism, and the myalgic and neuralgic conditions falling under the general headings of lumbago and sciatica, with their associated fibrositis pleurodynia, and other manifestations. The dragée is prepared in accordance with the view that these pathological conditions owe their origin to a deranged metabolism, and the manufacturers claim that they have received clinical testimony that the relief of "rheumatismal affections of the most varied description" has been gratifying. Upon the tin in which the dragées are distributed it is indicated that two may be taken twice daily after meals, but it is advised that they should be used in accordance with the directions of the doctor.

The Glaxo Laboratories (56, Osnaburgh-street, London, N.W.) have sent us a specimen case of AMPOULES, with a price list of the various preparations which can be employed through their medium. The distinctive feature of the ampoules is that they open with a clean break and have no dead space in which part of the solution may accumulate. The firm believe that their prices are 25 per cent. lower than those generally prevalent for such products, economies being secured not only by control of production and distribution of costs, but by the employment of a simple packing. The exact place of breaking the ampoule is indicated in the instructions, and the use of the opener which is supplied is described clearly.